Cereal Processing

Level-II

Based on October 2019, Occupational Standards (OS) Version2

Module Title: Applying Quality Systems and Procedures

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LG #53 LO #1: Monitor quality of work outcome

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying quality requirements
- Inspecting inputs
- Conducting work to produce required outcomes
- Monitoring work processes
- Adjusting the processes to maintain outputs
- Identifying and controlling the control points in the process

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify quality requirements
- Inspect inputs
- Conduct work to produce required outcomes
- Monitor work processes
- Adjust the processes to maintain outputs
- Identify and controlling the control points in the process

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet 1- Identifying quality requirements

1.1 Introduction

Food quality refers to the factors that influence how a consumer chooses a particular product. They may be positive factors, such as the golden brown colour of a loaf or the fineness of flour, or they may be negative factors, such as contamination of flour with insects, mould growth, off odours or a burned bakery product. Food safety refers to anything that could harm a consumer. This could include

- Microbiological: moulds, bacteria and viruses
- Biological: bone, hair, insects and faeces
- Chemical: pesticides, toxins, cleaning liquids and disinfectants
- Physical: wood, string, dirt and stones

Successful millers already use quality assurance to consistently product safe, high quality products and thus increase their reputation and numbers of customers. All processors (and their supplies and retail/wholesale customers) will be required to have formal quality assurance procedures based on good hygienic practices (GHP), good manufacturing Practices (GMP) and hazard analysis and critical control point (HACCP).

1.2 Aspects of quality assurance management programme

They are the first steps in the development of written GHP and GMP programmes and will enable the entrepreneur to identify potential hazards and critical control points in the milling and baking processes. The main quality characteristics of flour are that it should be:

- Pure flour without any contaminants
- Fine flour
- Have the correct weight in a pack.

One of the most important aspects of quality assurance is preventing food hazard contamination. The main contaminants that are found in grain are:

- Foreign materials (soil, weed seeds, stones, string, leaves etc.)
- Infestation by insects, excreta, hair from rodents or feathers from birds
- Mould growth

- Chemical residues (pesticide, oils or grease from vehicles or machinery and cleaning liquid residue)

A well-designed quality assurance programme prevents these contaminants from entering the mill, or discovers and removes them before they can contaminate the flour. Millers should also check for physical damage to grains and for immature grains which can impair product quality or lead to microbiological contamination.

The other components of a quality asurance programme, in addition to checking incoming grains, are to check:

- The correct operation of seed cleaners, dehullers and mills
- The building
- Implementation of cleaning programmes
- Flour quality and fill weights
- Correct sealing of bags/sacks. Each of these is summarized in Table 1.

Table 1.Quality control points for flour milling

Processing stage	Activity by miller	Critical Control Points
Grain production	Advice to farmers during cultivation in contract farming[2]	Types, amounts and timing in the use of agricultural chemicals
Harvest and on-farm storage	Advice to farmers on timing of harvest and post-harvest storage conditions in contract farming	Maturity at harvest, drying to correct moisture content, cleaning and the avoidance of contaminants, type and condition of storage structures, prevention of insect/rodent attack
Raw material transport	Transport in sacks to mill	Cleanliness and condition of sacks, cleaning lorry or vehicle before and after transport of raw materials
Reception and storage at the mill	Weighing incoming grain, inspection and quality checks, supervision of grain storage	Presence and weight or volume of contaminants, grain moisture content, condition of storeroom, prevention of insect/rodent attack, routine cleaning schedules.
Seed cleaning	Operation of seed cleaner(s)	Efficiency of cleaning, minimising contamination by dust
Dehulling	Operation of dehullers(s)	Dehuller settings for efficient hulling, minimising contamination by dust
Milling	Operation of mill	Machine settings for optimum milling efficiency, quality of flour, minimising contamination by dust, routing cleaning schedules and verification.
Flour storage	Supervision of flour storage	Condition of storeroom, prevention of insect/rodent attack, routine cleaning schedules and verification, (develop an inventory and rotation control system).
Packing	Packing flour into bags or sacks	Correct fill weights, adequate sealing of bags/sacks,
Distribution	Dispatch products in required amounts to retailers or customers	Cleaning programme for dispatch lorry or vehicle, implement a delivery inspection and inventory system to ensure customers receive the products and quantity ordered

1.3 Quality of raw materials

Poor quality grain is one of the most common problems facing millers and is caused by inadequate post-harvest control by farmers and inadequate storage conditions in the mill. Most millers buy their grain from farmers and have little control over the way in which grain is grown, harvested, stored or transported. Contract agreements with farmers can improve the amount of control that millers have over the quality of raw materials.

1.3.1 Contracts with farmers

Quality assurance in contract growing covers the following areas:

- Correct application of chemicals during cultivation
- Harvest at the correct stage of maturity
- Correct threshing and winnowing
- Adequate drying and post-harvest storage
- Correct packaging and transport of grains.

Table2. Summary of guidelines for correct grain storage

1. Make sure the storeroom is waterproof by locating it on well drained land, raising it above the ground and fitting a waterproof roof
2. Prevent the temperature in the store from fluctuating by using insulating materials (brick, mud, clay, wood or other insulation), painting the outside white and fitting an overhanging roof to keep sunlight off the walls.
3. Ensure that the store is insect-proof, rat-proof and bird-proof
4. Thoroughly clean storerooms by removing and burning all old grain, straw, insects etc. to prevent contamination of new grain
5. Make sure that grain is properly dried before putting it into a store
6. If chemical insecticides or fungicides are used, ensure that manufacturer's recommended dosages are followed.
7. Regularly check the grain for infestation, signs of mould or discolouration and ensure that it is not getting hot (each is a sign of excessive moisture). If these are found, remove the grain and re-dry it.

Table3. A moisture contents of cereals for safe storage and milling

Cereal	Moisture content (%) Storage Uganda	Codex Standards (maximums)	Milling Moisture
Maize (shelled)	13.5	15.5	15.0
Millet	16.0	13.0	13.0
Rice	15.0	15.0	14.0
Sorghum	13.5	14.5	11.0-13.0
Wheat	13.5	15.5	14-16

(Sources: Codex Standards are from officially published standards. All other figures: Fellows, P., Midway Technology Ltd. Bonsall, U.K.))

Table4. Moisture content (%) for the safe storage of flours

Flour	Moisture content (%) Storage Uganda	Codex Standards (Maximums)
Maize flour	13.5	15.0
Millet flour	15.5	13.0
Rice flour	13.0	
Sorghum flour	14.0	15.0
Soy protein flour	9.0	10.0
Wheat flour	12.0	15.5

(Sources: Codex: Standards are from officially published standards. All other figures: Fellows, P., Midway Technology Ltd, Bonsall, U.K.)

1.4 Quality checks on flours

If adequate quality assurance procedures are followed for inspection of grains, operation of the milling equipment and storage of flour, there are relatively few checks that are needed on the flour. The main one is to ensure that the weight filled into bags or sacks is not below the weight declared on the label or printed on the sack.

Self-check 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test : Short Answer Questions

1. Define what food quality is? (2 point).
2. Food safety refers to what? (5 point).
3. List down main quality characteristics of flour. (5 points)

You can ask you teacher for the copy of the correct answers.

Note: **Satisfactory rating - 15 points** **Unsatisfactory - below 15 points**

Information Sheet 2 - Inspecting inputs

2.1 Introduction

This sheet focuses on **inspecting inputs in food processing facilities.** Because inputs includes the inputs needed and outputs generated at each of these steps. A food system operates within and is influenced by inputs like social, political, economic and environmental contexts. It also requires human resources that provide labor, research and education. Specifically**, inputs** related to range of resources (staff, financial resources, space, equipment, etc.) utilized to accomplish the project's objectives.

2.2 Objectives of inspection

In accordance with the stated goal of basing food inspections on risk:

- To assess the adequacy and effectiveness of the facility's controls for addressing all the food-borne disease risk factors identified,
- To examine possibilities for improving the system, and
- To improve the quality and safety management system continuously.

2.3 Inspection techniques

Inspection of the facility usually entails the application of several techniques, including the following.

2.3.1 Observation

The inspector must observe the processes and procedures carried out at the facility, paying particular attention to those that may adversely affect product safety, to ensure that they are done correctly.

2.3.2 Inspection

Inspection may require actual handling of product(s) to determine such sensory characteristics of the products as odour. It may also consist of activities such as checking the cleanliness of equipment and food contact surfaces and taking note of the temperature indicated by thermometers or charts. The inspector must perform these inspections with

carefully washed hands (which can be used as a means of reinforcing the message of good personal hygiene) or using disposable gloves, if necessary, and ensuring that he/she does not become a source of contamination

2.3.3 Measuring

Measuring goes a step further than simple inspection in that the inspector uses an instrument to determine such parameters as temperature (e.g. of cold rooms or the product), pH, weight, time (e.g. the time for which a product is subject to cooking to achieve a predefined internal temperature), or the chlorination strength of wash water. The purpose of measuring during the inspection is to ascertain whether the facility's control instruments are working properly. Note that the inspector's instruments must be periodically calibrated against a traceable standard to serve this purpose.

2.3.4 Sampling and testing

The inspector may take samples for testing on site or later testing at a laboratory. Sampling must be done using aseptic techniques and adequate sampling plans. Samples must be handled in ways that ensure that the product is not adversely affected by time, temperature and the mode of transportation to the laboratory and testing must be performed using standard methods.

2.3.5 Questioning

The inspector should feel free to talk to facility operators during the inspection and question them about the procedures they follow when performing their tasks. The inspector should have advised the management during the opening meeting about his/her intention to talk to operators and emphasized that this would be done in the least disruptive manner.

2.3.6 Record review

Reviewing the facility's records is a very important part of the overall inspection process. It begins ahead of the actual inspection with the review of previous inspection reports, and continues during the inspection. The inspector must review such records as personnel health certificates and training certificates, laboratory results/certificates covering inputs

and products, records of system failures and corrective action taken, distribution records and any other relevant records.

2.3.7 Equipment inspection

- ✓ Set an example by wearing clean and appropriate clothing, having the right equipment, tools and materials and using proper techniques.
- ✓ Document violations or possible system improvement ideas photographically if possible.
- ✓ Use proper sampling techniques and preserve samples correctly for transportation to the laboratory.

2.3.8 Product list, production lines and flow diagrams inspection

- ✓ Obtain or prepare a process flow chart.
- ✓ Use the flow chart to anticipate critical steps in ensuring product safety.

2.4 Critical control points

- Determine operations critical to product safety.
- Determine whether plant personnel are aware of risk factors inherent to each product and operation.
- Determine that control measures for each risk factor are in place.

2.5 Critical limit(s) of each separate (minimum and maximum)

- Ascertain that the critical limits being used are appropriate.
- Determine that the critical limits are being observed.
- Determine that corrective actions are in place in case the critical limits are not reached.

2.6 Process validation

Verify that controls in per minimum and maximum limits of each separate meet the requirements of the quality and safety management system

2.7 Critical control point control records

Review per minimum and maximum limits of each separate control records.

2.7.1 Facility assessment (check/ensure that)

- ✓ Walls, floors and other surfaces for cracks and peeling paint.
- ✓ Walls and floors (smooth, no cracks), including coved floor/wall joints.
- ✓ Ceilings effectively prevent dust fallout and insect entry.
- ✓ Doors are self-closing and windows have screens.
- ✓ There are no gaps under doors or holes in walls etc. That could allow the ingress of pests.
- ✓ The illumination is appropriate, the temperature is pleasant or sufficiently low if needed and the air is free of moisture and dust.
- ✓ Air is not circulated from raw to finished product areas.
- ✓ Water is potable and ice is made from potable water.
- ✓ Effectiveness of drains and cleanliness of covers and traps.

2.7.2 Product assessment

- ✓ Examine dry product storage areas for moisture and pests.
- ✓ Check temperatures in refrigerated and frozen storage areas.
- ✓ Check that first-in first-out procedures are in place for the product.
- ✓ Observe loading procedure and transportation vehicles:
  - loading must not damage or contaminate the product;
  - transportation vehicles must protect the product and not contribute to contamination.
- ✓ Check product labeling for compliance with regulations and consumer protection against tampering and fraud.
- ✓ Ensure labels enable recalls.
- ✓ Examine product distribution records.

Self-Check – 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Define inspection? (5 points)
2. In accordance with the stated goal of basing food inspections on risk, list down objectives of inspection. (5 points)

Note: **Satisfactory rating - 15 points** **Unsatisfactory - below 15 points**

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Conducting work to produce required outcomes

3.1 Introduction

Let`s say any inquiry or resource as per planned request for processing is supplied and organized. Next, cereals undergo a number of processing stages between harvest and consumption. This chain of processes is often referred to as the total post-harvest system. The post-harvest system can be split into three distinct stages:

- Preparation of harvested grain for storage.
- Primary processing
  - ✓ Involves further treatment of the grain to clean it,
  - ✓ Remove the husk or reduce the size.
- Secondary processing transforms the grains into edible products.

3.2 Work (Activities) in the cereal processing

3.2.1 Primary cereal processing

Involves several different processes, designed to

- ✓ Clean, Sort,
- ✓ Remove the inedible fractions
- ✓ Grading, hulling
- ✓ Milling, pounding
- ✓ grinding, tempering,
- ✓ parboiling, soaking
- ✓ drying, sieving

3.2.2 Secondary processing

Secondary cereal processing (or 'adding value' to cereals) is the utilization of the primary products (whole grains, flakes or flour) to make more interesting products and add variety to the diet. Activities of cereal in the secondary processing:

- ✓ Fermentation
- ✓ Baking
- ✓ Extrusion
- ✓ Puffing
- ✓ Flaking

3.3 Activities and required outcomes

3.2.3 Puffing

Puffed grains are often used as breakfast cereals or as snack food. During puffing, grains are exposed to a very high steam pressure which causes the grain to burst open. The

puffed grains can be further processed by toasting, coating or mixing with other ingredients.

3.2.4 Flaking

Flaked cereals are partially cooked and can be used as quick-cooking or ready to eat foods. The grains are softened by partially cooking in steam. They are then pressed or rolled into flakes which are dried. The flakes are eaten crisp and should have a moisture content of below 7%.

3.2.5 Fermentation

Dough made from cereal flour can be fermented to make a range of products.

3.2.6 Baking

Dough and batters made from cereal flours are baked to produce a range of goods.

3.2.7 Extrusion

Extrusion involves heating and forcing food (usually dough) through a small hole to make strands or other shapes. The extruded shapes then undergo further processing such as frying, boiling or drying. Extruded products include pastas, noodles, snack foods and breakfast cereals.

3.4 Cereal processing and its control

Processing should be

- Planned, scheduled and controlled by a designated and competent person, to
  - ✓ Ensure compliance with documented feed specifications and documented parameters for critical processes.
  - ✓ Controls relevant to feed safety should be demonstrably effective and managed in accordance with prerequisite programs including Good Management Practices and Hazard Analysis Critical Control Point principles.
- Procedures should include corrective actions to be taken in the event of critical process parameters being breached.
- Where mixing or dispersion forms an essential part of the process, tests should be undertaken to establish
  - ✓ initial effectiveness of equipment and,
  - ✓ on a subsequent frequency determined by risk analysis,

- To ensure that no loss of efficiency occurs through the effects of wear and tear.

- Records should be kept of such tests.
- In situations where breakdown or other unforeseen circumstances result in the production of feed that does not meet specification, the resulting products should be treated in accordance with non-conforming product procedures.

3.5 Summary

Projects and small businesses may involve only one or several of the activities in the total chain, from the growing of crops through to the production of edible products. Some small businesses are set up to clean and package wholegrain. These businesses can be successful as there is very little need for equipment. However, as with all businesses, there must be a clear demand for the product.

Self-Check – 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. List down the cereal processing stages and discus on the primary and secondary processes? (5 points)
2. Write down the cereal processing out comes? (5 points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**
You can ask you teacher for the copy of the correct answers.

Information Sheet 4 - Monitoring work processes

4.1 Monitoring

Monitoring is a continuous process of collecting and analyzing information to compare how well a project, a program or policy is being implemented against expected results. Monitoring aims at providing managers and major stakeholders with regular feedback and early indications of progress or lack thereof in the achievement of intended results.

4.2 Need of monitoring in the cereal processing

Monitoring and evaluation are needed in order to:

- Provide continual feedback on project components and processes
- Detect contextual shifts and changes in the status of the target workers
- Inform decisions on operations, policy or strategy
- Facilitate accountability for project resources to owners
- Demonstrate positive, sustainable results of processing activities
- Identify successful strategies for extension, expansion or replication
- Modify unsuccessful strategies
- Capture lessons and knowledge on what works and what does not
- Give stakeholders an opportunity to have a say in the program
- Provide an accurate determination of program impact

4.3 Monitoring and evaluation system basic elements

Every project (eg. Cereal processing) design employs a hierarchy of basic elements known as: inputs, activities, outputs, outcomes, and impacts. These elements of project design are also components of a logical framework and results framework and of the monitoring and evaluation system for that particular project.

Table 1. Types of Indicators and Purpose

Types of Indicators	Purpose
Impact indicators	Measure the extent to which the overall program goals are being achieved
Outcome indicators	Measure the extent to which the project objectives are being met
Output indicators	Measure project deliverables
Input indicators	Measure the extent to which the planned resources e.g. money, materials, personnel are being utilized

Indicators tell us what we want to measure.

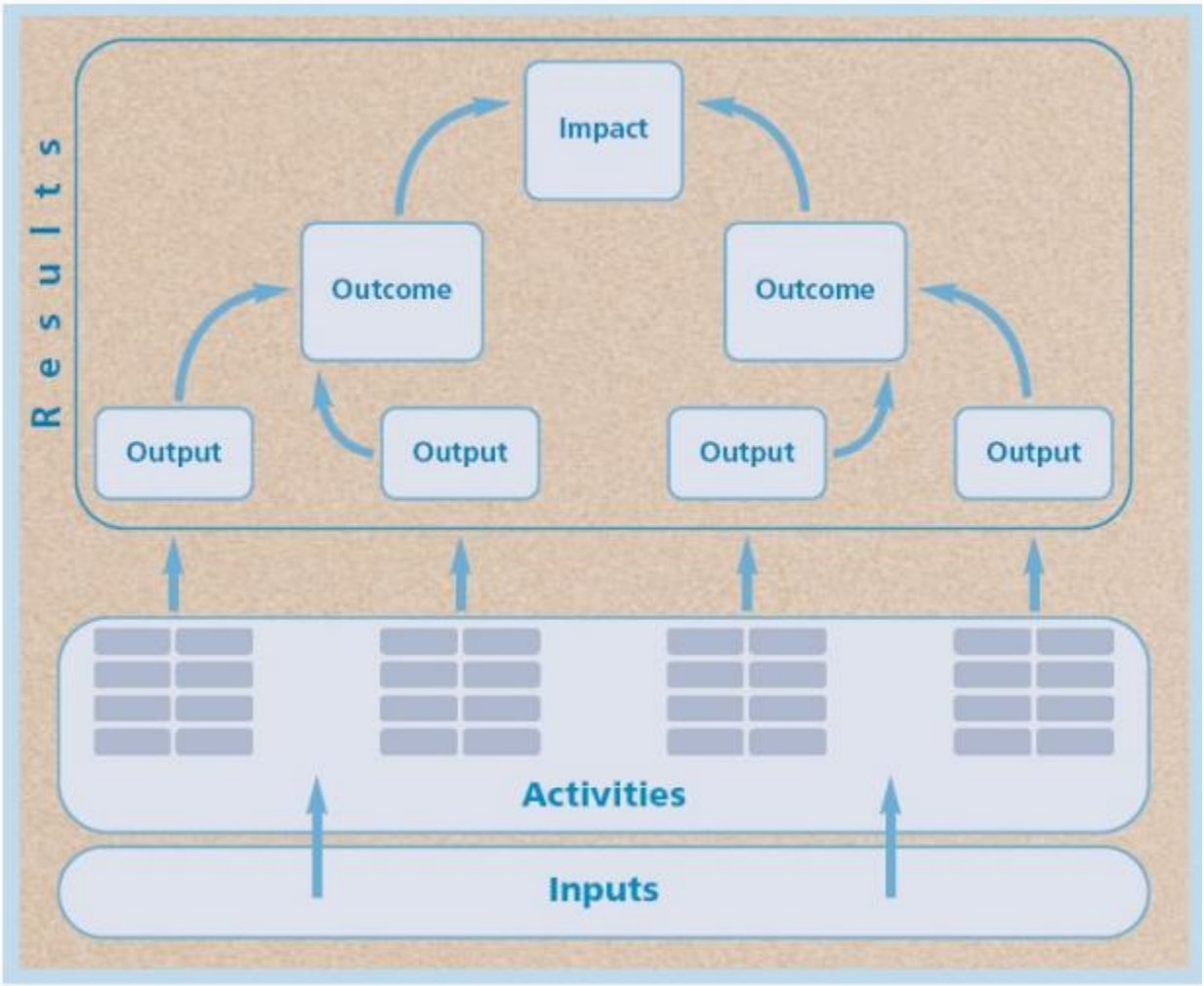


Figure1. Project Hierarchy. Source: WSP 2020.

Cereal processing employs a progression of activities that is consistent from the design through implementation to the evaluation stage. These activities begin when a project mobilizes a set of inputs (human and financial resources, equipment, grains) to carry out activities (training sessions, infrastructure building, work area facilities organization, etc) that generate outputs (e.g. number of people trained; number of stakeholders, raw material prepared, etc). Outputs contribute to outcomes, which are changes in behaviors or systems among project participants (e.g. increased knowledge; improved practices, product acceptance) among the program participants. Outcomes contribute to impacts, which are judged to be sustainable improvements in fundamental conditions at **the** household, community or regional level (reduced malnutrition; improved food production, etc).

4.4 Design principles for monitoring and evaluation

All project design plans have at least five components that are considered components of the project itself as well as the measurable Monitoring and Evaluation aspects. They are:

- Inputs,
- Activities,
- Outputs,
- Effects/outcomes and
- Impacts.

These might be translated in various Monitoring & Evaluation frameworks as inputs, processes, outputs, outcomes, intermediate results, and impacts and linked to project goals and objectives. This section will begin to detail the steps towards creating a logical program design with these elements in a project hierarchy.

4.5 Steps to setup a monitoring systems

The **six steps** involved in designing a Monitoring and Evaluation system include:

Setting up the purpose and scope – Why an Monitoring and Evaluation system is needed?

- Identifying information needs and indicators – what do we need to know to manage a project?
- Planning information gathering and organization – how do we gather required information and how to organize it?

- Planning for data processing – how do we process the data and produce meaningful results to make inferences?
- Planning for quality communication and reporting – how and to whom do we want to communicate the information
- Planning critical reflection processes and events – how to use the information to make improvements?

A well-developed project design document will include an indicative Monitoring & Evaluation framework that provides detail information about the above mentioned steps to facilitate budgeting and allocation of technical expertise, to give funding agencies an overview of how M&E will be undertaken, and to guide project and partner staff during start up. However, it is important to understand that this will only be indicative and needs to be adjusted and detailed further during the start-up phase.

4.6 Purpose and scope of the monitoring evaluation

System Definition of the purpose and scope of the intended Monitoring & Evaluation system helps to decide the number of indicators to track, information need, budget level, information type (quantitative, qualitative or both), frequency, tools needed, etc. “What are the main reasons to set up and implement Monitoring & Evaluation, for us – as implementing partners and primary stakeholders – and for other key stakeholders?”

4.7 Determination of information needs and identify indicators

The next step is to take the objective hierarchy from the logical framework and list down indicators from the logframe matrix.

Table1. Objective hierarchy links to monitoring and evaluation

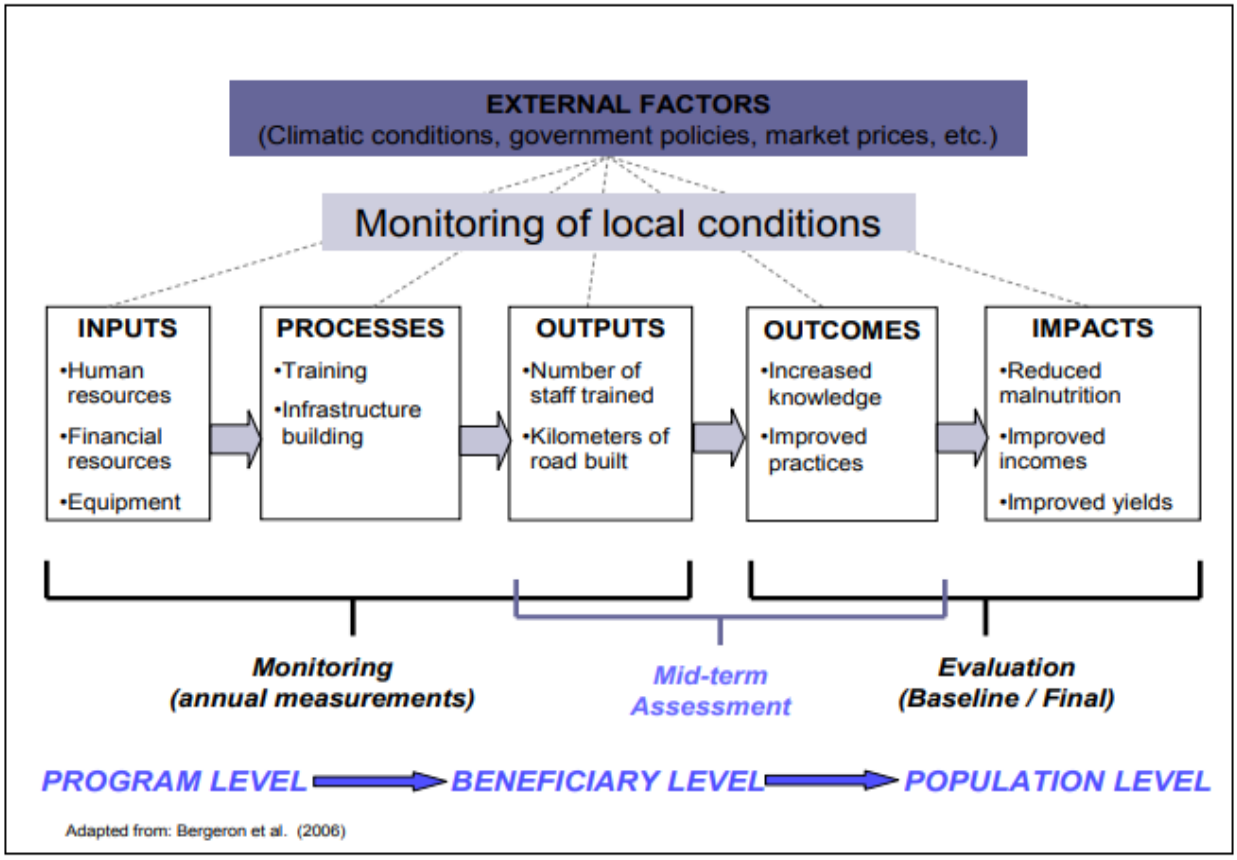
Level in project hierarchy	What to monitor and evaluate
Goal (Impact)	To what extent has the project contributed towards its longer term goals? Why or why not? What unanticipated positive or negative consequences did the project have? Why did they arise?
Purpose/objectives (Outcome)	What changes have occurred as a result of the outputs and to what extent are these likely to contribute towards the project purpose and desired impact? Has the project achieved the changes for which it can realistically be held accountable?
Outputs	What direct tangible products or services has the project delivered as a result of activities?
Activities	Have planned activities been completed on time and within the budget? What unplanned activities have been completed?
Inputs	Are the resources being used efficiently?

4.8 Data processing

Collected information need to be collated, perhaps summarized and analyzed by the right people. Often data analysis goes beyond data summaries and involves tests of statistical significance. Seeing monitoring as a learning process implies that analysis and agreeing on decisions are undertaken with all level of staff in the project hierarchy and with partners.

4.9 Communication and reporting

A Project proposal usually specifies the expected reporting schedule, indicating who should receive a report and how often. However the project also needs to communicate Monitoring & Evaluation findings to other stakeholders and for different reasons.


EXTERNAL FACTORS
(Climatic conditions, government policies, market prices, etc.)
Monitoring of local conditions
INPUTS
•Human resources
•Financial resources
•Equipment
PROCESSES
•Training
•Infrastructure building
OUTPUTS
•Number of staff trained
•Kilometers of road built
OUTCOMES
•Increased knowledge
•Improved practices
IMPACTS
•Reduced malnutrition
•Improved incomes
•Improved yields
Monitoring
(annual measurements)
Mid-term
Assessment
Evaluation
(Baseline / Final)
PROGRAM LEVEL
BENEFICIARY LEVEL
POPULATION LEVEL
Adapted from: Bergeron et al. (2006)

Self-Check – 4	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test : Short Answer Questions

1. Define purpose and scope of the Monitoring & Evaluation**?** (5points)
2. Why does cereal processing need monitoring? (5points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**
You can ask you teacher for the copy of the correct answers.

Information sheet 5- Adjusting the processes to maintain outputs

5.1 Equipment adjusting and maintenance

Adjusting typically means adjusting or standardizing your equipment so it can be more precise and improve the factory work performance. Another reason for lost production is delays caused by waiting for spare parts after equipment breaks down. As a minimum, cereal processors should monitor the state of equipment that is likely to wear out and as their experience grows over the years, they should buy spare parts or send the machine for servicing when they expect that a component is due to be replaced. There are likely to be a few parts that wear out more quickly than others (e.g. mixer bearings, heating elements in bag sealers, drive belts and hammers in mills). These should be identified and spare parts kept in stock. Processors can make an agreement in advance, possibly involving a small annual fee, to ensure that **electricians or mechanics repair equipment** as a priority.

Lack of maintenance is one of the most common problems that cause small-scale millers and bakers to lose money. Machine breakdowns arise from a number of different causes. They reduce productivity and increase production costs. Poorly maintained machines also produce substandard products and can contaminate products with metal fragments, as well as being a potential hazard to operators. Another common cause of failure is when those who operate or maintain a machine arbitrarily alter it. Proper maintenance ensures that machinery operates correctly and safely and prolongs its life, thus reducing capital and operating expenditure. To put preventive maintenance into practice, the following actions are needed:

- Identify priority machinery which have components that wear out more frequently
- Make a clear description of the procedures and standards for the work of machine operators and maintenance workers (such as lubricating, tightening bolts, adjustments etc.) in daily, weekly and monthly routine maintenance plans
- Organise a schedule and train staff to implement maintenance plans.
- Prepare a maintenance budget

- Record inspection results, analyse the records and evaluate the success of maintenance
- Continuously update procedures and standards.

5.2 Productivity improvement

Productivity can be improved by:

- Improved efficiency (e.g. lowering operating costs, savings in idle machine time and reducing waste)
- Better procedures for buying materials
- Improved decision making and communication
- Higher performance by minimizing equipment breakdowns, reducing other causes of lost time
- Improved organization, better staff morale and co-operation.

Improved process efficiency can be achieved by increasing the output of a processing plant without additional investment. To measure this entrepreneur must calculate how much money it costs to produce one unit. If more units are produced at the same cost or within the same time frame without affecting quality, then productivity is increased. Productivity can also be improved by changing the product design or layout of the production facilities, changing raw materials suppliers or work organization.

Improving efficiency in a process involves reducing wastage of time, materials and space, or unnecessary movement of foods, staff or equipment. Motivated staff will go a long way to increasing efficiency by reducing wastage. The layout of a production unit is another factor that can affect efficiency. When deciding where to fix permanent machinery, care should be taken to plan the layout to allow for a flow of product through the process, sufficient space to avoid congestion and to ensure safe operations

Table1. Details of routine mill maintenance schedule

Daily Maintenance	**Mechanical** • check and grease bearings, replace if faulty • check pulley wheels for cracks and replace to avoid damaging belts. • check bolts and nuts for tightness. • check the oil level in diesel engines and top up with the correct oil if required.
	Electrical • clean flour dust off motors and other electrical equipment • when a machine is not in use, make sure that power is switched off at the mains and that equipment has not been left switched on. This is very important when power cuts occur, because when power returns a machine that has been left on can injure an operator or cause a fire.
	Housekeeping • store tools and equipment in pre-determined places to help find them next time and to help notice when they have gone missing. • always keep walkways clear of tools and equipment • clean diesel engine cooling fins every day to prevent dust settling and causing the engine to overheat and eventually seize • when re-fuelling diesel engines, pour the fuel through a filter to prevent rust deposits in the fuel drum getting mixed with the fuel and damaging the engine • clean the machinery and floor
Weekly maintenance	• check hammers for wear and replace if necessary • check the shaft (especially if locally manufactured machines are not tested for strength or alignment) • check that locking nuts on the shaft are tight. • check that fan bolts have not loosened as the fan then becomes very dangerous. • check the bearing mountings as this area is prone to cracking • check the engine oil and oil filter on diesel engines and change them every 160 working hours. Change the fuel filter every 320 working hours.
Monthly maintenance	• check the body casting and welds for cracks • tighten floor nuts and look for any cracks in the mill foundation • check the fan key and make sure that the fan is a slide fit on the shaft for easy removal. If the blades are worn always replace with the correct thickness of steel and then check for balance • check that cables are secured and there is no sign of insulation breakdown • check the acid level in batteries that are used to start diesel engines. Keep the terminals clean.

Table2. Summary of guidelines for correct grain storage

1. Make sure the storeroom is waterproof by locating it on well drained land, raising it above the ground and fitting a waterproof roof
2. Prevent the temperature in the store from fluctuating by using insulating materials (brick, mud, clay, wood or other insulation), painting the outside white and fitting an overhanging roof to keep sunlight off the walls.
3. Ensure that the store is insect-proof, rat-proof and bird-proof
4. Thoroughly clean storerooms by removing and burning all old grain, straw, insects etc. to prevent contamination of new grain
5. Make sure that grain is properly dried before putting it into a store
6. If chemical insecticides or fungicides are used, ensure that manufacturer's recommended dosages are followed.
7. Regularly check the grain for infestation, signs of mould or discolouration and ensure that it is not getting hot (each is a sign of excessive moisture). If these are found, remove the grain and re-dry it.

Table3. Quality assurance control points for flour milling

Processing stage	Activity by miller	Critical Control Points
Grain production	Advice to farmers during cultivation in contract farming[2]	Types, amounts and timing in the use of agricultural chemicals
Harvest and on-farm storage	Advice to farmers on timing of harvest and post-harvest storage conditions in contract farming	Maturity at harvest, drying to correct moisture content, cleaning and the avoidance of contaminants, type and condition of storage structures, prevention of insect/rodent attack
Raw material transport	Transport in sacks to mill	Cleanliness and condition of sacks, cleaning lorry or vehicle before and after transport of raw materials
Reception and storage at the mill	Weighing incoming grain, inspection and quality checks, supervision of grain storage	Presence and weight or volume of contaminants, grain moisture content, condition of storeroom, prevention of insect/rodent attack, routine cleaning schedules.
Seed cleaning	Operation of seed cleaner(s)	Efficiency of cleaning, minimising contamination by dust
Dehulling	Operation of dehullers(s)	Dehuller settings for efficient hulling, minimising contamination by dust
Milling	Operation of mill	Machine settings for optimum milling efficiency, quality of flour, minimising contamination by dust, routing cleaning schedules and verification.
Flour storage	Supervision of flour storage	Condition of storeroom, prevention of insect/rodent attack, routine cleaning schedules and verification, (develop an inventory and rotation control system).
Packing	Packing flour into bags or sacks	Correct fill weights, adequate sealing of bags/sacks,
Distribution	Dispatch products in required amounts to retailers or customers	Cleaning programme for dispatch lorry or vehicle, implement a delivery inspection and inventory system to ensure customers receive the products and quantity ordered

Table 4. Moisture contents of cereals for safe storage and milling

Cereal	Moisture content (%) Storage Uganda	Codex Standards (maximums)	Milling Moisture
Maize (shelled)	13.5	15.5	15.0
Millet	16.0	13.0	13.0
Rice	15.0	15.0	14.0
Sorghum	13.5	14.5	11.0-13.0
Wheat	13.5	15.5	14-16

(Sources: Codex Standards are from officially published standards. All other figures: Fellows, P., Midway Technology Ltd. Bonsall, U.K.))

Table 5. Moisture content (%) for the safe storage of flours

Flour	Moisture content (%) Storage Uganda	Codex Standards (Maximums)
Maize flour	13.5	15.0
Millet flour	15.5	13.0
Rice flour	13.0	
Sorghum flour	14.0	15.0
Soy protein flour	9.0	10.0
Wheat flour	12.0	15.5

(Sources: Codex: Standards are from officially published standards. All other figures: Fellows, P., Midway Technology Ltd, Bonsall, U.K.)

5.3 Process control

Seed cleaners, dehullers and mills should be checked daily for loose nuts or bolts and to ensure that settings are correct. Parts that are likely to wear out should be checked monthly as part of a planned maintenance programme. Contaminants such as metal fragments, pieces of hardened flour, wire or nylon from sieves or cotton fibres from sacks can each contaminate flour during milling. Sieves should be used at points throughout the process to collect larger contaminants and checked regularly. Contaminants should be recorded and any sudden increase, which indicates that a problem has arisen, should be investigated and corrective action taken. Magnets remove any ferrous (iron and steel) metal fragments from grain or flour. Permanent magnets are preferred because electromagnets can drop an accumulated mass of filings into the flour if the power fails. Magnets cannot pick up nonferrous metals and these must be checked for by visual inspection.

Self-Check – 5	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test: Short Answer Questions

1. Discuss on some quality assurance control points of flour milling? (5 points)
2. How could you improve the cereal processing productivity? (5 points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Information Sheet 6 - Identifying and controlling the control points in the process

6.1 Introduction

Hazard analysis and critical control points (HACCP) is a systematic preventive approach to food safety from biological, chemical, physical hazards and more recently radiological hazards in production processes that can cause the finished product to be unsafe and designs measures to reduce these risks to a safe level. In this manner, HACCP **attempts to avoid hazards rather than attempting to inspect finished products** for the effects of those hazards. The HACCP system can be used at all stages of a food chain, from food production and preparation processes including packaging, distribution, etc.

6.2 Identifying critical control points

6.2.1 Definition and Considerations

A critical control point is “a point or step at which control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.”

Critical Control Points are identified only after the completion of the hazard analysis principle one. Any attempts by the hazard analysis critical control point team to identify critical control points without the benefit of a thorough hazard analysis often results in the identification of more critical control points than is necessary. Critical control points represent the steps in the process where a hazard can be controlled and control at this step is essential to ensure food safety. Critical control point decision trees can be useful tools to help in the identification of critical control points. The use of decision trees will be discussed later in this section.

6.2.2 Critical control points for hazard control – prevention

As stated previously, critical control points are a point of control that is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

The following are examples of possible critical control points where hazards could be prevented.

- ✓ Introduction of a hazard can be prevented by control at receiving step (e.g. by requiring a supplier declaration or certificate of analysis prior to receipt).

- ✓ A chemical hazard can be prevented by control at an ingredient addition or blending step (e.g. properly formulating products that contain preservatives or vitamins that could be hazardous if present at high concentrations).
- ✓ Pathogen growth in a finished product can be prevented by control at formulation or ingredient addition step (e.g. pH adjustment or addition of preservatives)
- ✓ Pathogen growth can be controlled by chilling, refrigerated storage or freezing

Figure 1. Hazard prevention-sanitation

6.2.3 Critical control points for hazard control – elimination

The following are examples of possible critical control points where hazards could be eliminated.

- ✓ Bacterial pathogens and parasites can be killed during heat treatment or UV light treatment of foods.
- ✓ Anasak is (a nematode parasite) in fish can be killed by freezing (-20°C for 7 days).
- ✓ Metal fragments can be detected by a metal detector and eliminated by removing the contaminated product.
- ✓ Physical hazards of all types can be eliminated from liquid products such as clear juices or drinks by filtering through a sieve having a sufficiently small mesh size. [Screens are routinely used in-line in liquid processing equipment such as pasteurizers.

6.2.4 Critical control points for hazard control

The following are examples of possible critical control points where hazards could be reduced to acceptable levels.

- ✓ The occurrence of foreign objects can be minimized by manual sorting and automatic collectors.
- ✓ The chemical hazards patulin (a mycotoxin produced by Penicillium expansum and some other molds) can be reduced by processes such as culling, brushing and washing apples prior to juice extraction

Figure2. Hazard control to at acceptable level.

6.3 Assessment of control measures

To identify the critical control points in the process, the hazard analysis critical control point team must carefully assess the control measures identified during the hazard analysis. During this assessment, the hazard analysis critical control point team must:

- Identify control measures or combination of control measures capable of preventing, eliminating or reducing these food safety hazards to acceptable levels.
- Review each of the control measures with respect to its effectiveness against the identified food safety hazards.
- Categorize control measures as to whether they are managed by Prerequisite Programs, or need to be managed through the hazard analysis critical control point plan.

While there likely are several points in the process where hazards can be controlled to some extent, there are likely to be only a few steps where loss of control will result in the production of a potentially unsafe food. Those steps are the critical control points in the hazard analysis critical control points plan.

6.4 **Critical control point decision trees**

The hazard analysis critical control point's team can use critical control points decision Trees to assist in evaluation of each of the steps where food safety hazards can be prevented, eliminated, or reduced to acceptable levels.

Do not use the critical control point decision Tree before completing the hazard analysis. Doing so may result in identifying critical control points that are not essential to controlling product safety. Strictly following a critical control point decision tree sometimes results in a decision that common sense says is incorrect. Therefore, the hazard analysis critical control points team should use critical control point decision trees with caution.

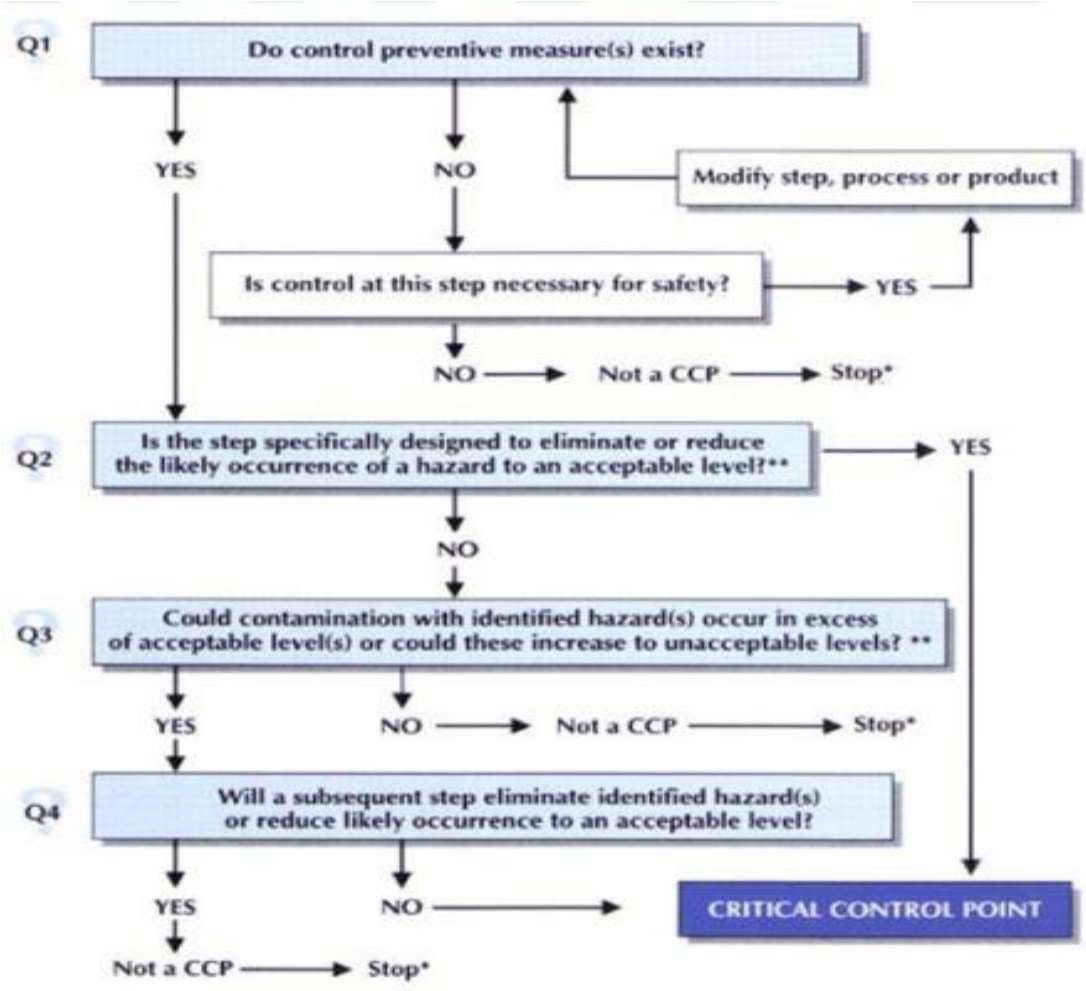


Figure3. An example of a critical control points and hazard control decision tree (Source: FAO).

6.5 Critical control points and Hazard Control: Other Considerations

The number of critical control points required to control all significant food safety hazards depends on the product and process. Too few critical control points may not allow for adequate control of food safety hazards, whereas identifying too many critical control points may overburden the hazard analysis critical control points plan.

- A common saying among practitioners in the field is “If everything is significant (i.e. a critical control point), then nothing is significant.” This refers to the fact that you cannot effectively manage too many critical control points in a single process. It is important to focus on those steps that are essential for food safety.

A single hazard may require control by multiple critical control points. Example: Acidification and thermal processing of fruit purees to control clostridium botulinum growth and toxin formation. Multiple hazards may be controlled by a single critical control points. Example: Vegetative pathogenic bacteria and parasites in apple juice can be controlled by the same thermal process. This also generally applies to the ability of thermal processes to control vegetative pathogenic bacteria and protozoan parasites.

6.6 Critical control points are product- and process-specific

As stated previously, the hazard analysis conducted by two establishments producing the same product may differ considerably. Likewise, critical control points identified by firms producing the same product may be different due to heterogeneity in:

- Facility layout
- Process flow
- Formulation
- Equipment
- Ingredient selection and suppliers
- Sanitation and other prerequisite programs, and
- Other factors

Figure 4. Heterogeneity of the same product

6.1 International organization food safety standard

International organization for standardization (ISO) 22000 is a food safety standard developed by the International Organization for Standardization. ISO 22000 was designed to be compatible with the ISO 9001 series of standards and is the preferred food safety standard for some food companies operating in international commerce. The ISO 22000 standard fully incorporates hazard analysis critical control point principles as described by the codex alimentarius commission. However, ISO 22000 also includes a new category of hazard control – Operational Prerequisite Programs.

The definition of an Operational Prerequisite Program (oPRPs) is a prerequisite program identified by the hazard analysis as essential in order to control the likelihood of introducing food safety hazards to and/or the contamination or proliferation of food safety hazards in the product(s) or in the processing environment.

6.7 Critical control points versus prerequisites program (and oPRPs)

Critical Control Points are:	Prerequisite Programs are:	Operational PRPs (ISO 22000) are:
The points of absolute control in the HACCP system. Steps in the food process which must be under control to produce a safe product. An intervention used when the hazard has a high probability of existing and the risk level to the consumer is high	The generic controls in any type of food operation. Applied in all types of food operations to maintain a hygienic environment to reduce the food safety risk. In operation at all times. The foundation of HACCP. Able to affect end product safety if not included in the food safety management system. NOT specific to one step in the process and DO NOT CONTROL a specific hazard.	Specific to a food operation and are determined after doing the hazard analysis. Essential because the hazard analysis has shown that they are necessary to control specific food safety hazards. Typically not focused on a specific source of the hazard. Used to reduce the likelihood that products and/or processing environment will be exposed to hazards or will be contaminated and that hazards will proliferate.

6.8 **Documenting critical control points**

The identified critical control points (CCPs) and the rationale for their selection must be recorded by the hazard analysis critical control point's team. These become part of the overall records for the hazard analysis critical control points plan. Methods for identifying or designating critical control points in hazard analysis critical control point's plans can vary, as there is no established convention. Some options are:

- Sequential numbering
  - ✓ CCP #1, CCP #2, CCP #3
  - ✓ Sequentially within hazard category CCP P1, CCP B1, CCP C1
- By process step name
  - ✓ Oven, Packaging, Chill

Figure5. Critical control points recording file.

Self-Check – 6	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test. Short Answer Questions

1. Define “critical control point” and describe the general process for determining critical control points in a hazard analysis control critical control points plan? (5 points)
2. Discuss examples of critical control points that can prevent or eliminate a hazard or reduce a hazard to an acceptable level? (5 points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Operation sheet 2 - Critical control point control records

Facility assessment (check/ensure that)

- Walls, floors and other surfaces for cracks and peeling paint.
- Walls and floors (smooth, no cracks), including coved floor/wall joints.
- Ceilings effectively prevent dust fallout and insect entry.
- Doors are self-closing and windows have screens.
- There are no gaps under doors or holes in walls etc. That could allow the ingress of pests.
- The illumination is appropriate, the temperature is pleasant or sufficiently low if needed and the air
  is free of moisture and dust.
- Air is not circulated from raw to finished product areas.
- Water is potable and ice is made from potable water.
- Effectiveness of drains and cleanliness of covers and traps.

Operation sheet 4– Steps to setup a monitoring systems

Six steps involve in designing a monitoring and evaluation system includes:

- Set up the purpose and scope – Why an Monitoring and Evaluation system is needed?
- Identify information needs and indicators – what do we need to know to manage a project?
- Plan information gathering and organization – how do we gather required information and how to organize it?
- Plan for data processing – how do we process the data and produce meaningful results to make inferences?
- Plan for quality communication and reporting – how and to whom do we want to communicate the information
- Plan critical reflection processes and events – how to use the information to make improvements?

LAP Test	Demonstration

Name---------- ID---------- Date----------

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1** hour. The project is expecting you to do it.

Task Objectives/Demands: in accomplishing activities required for this project the student will be able to:

Task	Test
1	Perform checking or assuring facility assessment as indicated under critical control point control records title.
2	Apply the Six steps involve in designing a monitoring and evaluation system.

LG #71	LO2: Participate in maintaining and improving quality at work

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Monitoring the work area, materials, processes and product
- Participating employee in improving product quality
- Conducting the work with work place information
- Conducting the work through workplace environmental guidelines
- Identifying, recording and reporting the non-conformance in inputs, process, product and/or service
- Taking corrective action to maintain quality standards
- Raising quality issues

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, **you will be able to**:

- Monitor the work area, materials, processes and product
- Participate employee in improving product quality
- Conduct the work with work place information
- Conduct the work through workplace environmental guidelines
- Identify, recording and reporting the non-conformance in inputs, process, product and/or service
- Take corrective action to maintain quality standards
- Raise quality issues

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

Information Sheet 1- Monitoring the work area, materials, processes and Product

1.1 Monitor and improve workplace operations

Performance Criteria are:

- Monitor efficiency and service levels on an ongoing basis through close contact with day to day operations
- Ensure that operations in the workplace support overall enterprise goals and quality assurance initiatives
- Identify quality problems and issues promptly and make appropriate adjustments accordingly with relevant approvals
- Adjust procedures and systems in consultation with colleagues to improve efficiency and effectiveness
- Consult colleagues about ways to improve efficiency and service levels

1.2 Plan and organize workflow

Performance Criteria are:

- Schedule work in a manner that enhances efficiency and customer service quality
- Delegate work to appropriate people in accordance with principles of delegation
- Assess progress against agreed objectives and timelines
- Assist colleagues in prioritization of workload through supportive feedback and coaching

1.3 Maintain workplace records

Performance Criteria are:

- Complete workplace records accurately and submit within required timeframes.
- Where appropriate, delegate and monitor completion of records prior to submission.

1.4 Solve problems and make decisions

Performance Criteria`s are:

- Identify workplace problems promptly and analyse from an operational and customer service perspective

- Initiate corrective action to resolve the immediate problem where appropriate
- Encourage team members to participate in solving problems they raise
- Monitor the effectiveness of solutions in the workplace

Self-Check – 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test: Short Answer Questions

1. **How to perform monitoring and improving workplace operations**? (5 points)
2. Write only two performance criteria to maintain workplace records? (4 points)

Note: **Satisfactory rating – 15 points** **Unsatisfactory - below 15 points**

You can ask you teacher for the copy of the correct answers.

Information sheet 2 – Participating employee in improving product quality

2.1 Employee Participation

Employee participation is the process whereby employees are involved in decision making processes, rather than simply acting on orders. Employee participation is part of a process of empowerment in the workplace. Empowerment involves decentralizing power within the organization to individual decision makers further down the line. Workers' participation in management implies mental and emotional involvement of workers in the management of enterprise. It is considered as a mechanism where workers have a say in the decision. The philosophy underlying workers' participation stresses:

- Democratic participation in decision-making,
- Maximum employer-employee collaboration,
- Minimum state intervention;
- Realization of a greater measure of social justice,
- Greater industrial efficiency, and
- Higher level of organizational health and effectiveness.

According to International Labour Organization (ILO) “workers' participation, may broadly be taken to cover all terms of association of workers and their representatives with the decision making process, ranging from exchange of information, consultations, decisions and negotiations, to more institutionalized forms such as the presence of workers' members on management or supervisory boards or even management by workers themselves.

The main implications of workers' participation in management as summarized by ILO:

- Workers/employees have ideas which can be useful,
- Workers/employees may work more intelligently if they are informed about the reasons for and then intention of decisions that are taken in a participative atmosphere.

2.2 Forms of employee participation

2.2.1 Collective bargaining

Collective Bargaining is based on the principle of balance of power. It is a technique intended to achieve a greater degree of harmony and cooperation by emphasizing on matters of common interest. Employees at times prefer to use collective bargaining than asking for a share in the management.

2.2.2 Works councils

Works Councils are exclusive bodies of employees assigned with various functions in the management of an organization. In some countries like West Germany and Yugoslavia such councils have wider decision making powers.

2.2.3 Joint management councils and committees

These are the consultative and advisory bodies of employees where the final decision making is left to the top management.

2.2.4 Workers ownership of enterprise

Here, workers/ employees themselves take the responsibility of running the business. Yugoslavia is the best example of social self-management by workers where entire control of business management is with the workers. Employees are trusted to make decisions for themselves and the organization. This is a key motivational tool. Employee participation is also referred to as employee involvement (EI).

2.3 Objectives of employee participation

- To raise the level of motivation of employees by closer involvement in management,
- To provide opportunity for expression and a sense of importance to employees,
- To develop ties of understanding for harmony and
- To act as an instrument in solving industrial relations problems.

2.4 Levels of employee participation

Employee Participation is possible at all levels of management. There are five major levels of employee participation.

2.4.1 Information Participation

Here, the employees are able to receive information and express their view relating to work and business in general.

2.4.2 Consultative Participation

The employees are consulted on matters related to their work and their welfare. The employees can only express their expectations and advice on related matters. However, the final decision rests with the management.

2.4.3 Associative Participation

It is an extension of consultative participation where the management is under obligation to accept and implement the unanimous decisions of the employees.

2.4.4 Administrative Participation

Here, employees have a greater share in the discharge of managerial functions. The employees are empowered to select the best from the alternative decisions for implementation.

2.4.5 Decisive Participation

It is the highest level of participation where the decisions are jointly taken by the employees and the management on the matters related to production, welfare, introduction of change, etc.

2.5 Pre-requisites for effective employee participation

- There should be a strong and representative unionism for the successful participation,
- Both the employees and management should have firm faith in the philosophy of employee participation,

- There should be strong feeling and zeal towards participation on the part of employees,
- There should be clearly formulated and mutually agreed objectives for employee participation,
- The employees should be effectively consulted in the matters of participation,
- There should be proper education and training with regard to employee participation for its success.

2.6 Factors need to be addressed in the proper implementation of Employee Participation systems

- Willingness by management,
- Training to the managers/supervisors,
- Clear policy regarding the role and prerogatives of senior managers, line managers and the workforce under their supervision,
- Training to employees on managerial skills such as presentation, decision making, problem solving, leadership, etc.
- Feedback mechanism.

2.7 Benefits of employee participation

Employee Participation is used as a tool to enhance the relationships in the organization.

- Employee Participation increases the job satisfaction and morale of the employees and in turn enhances their productive efficiency,
- It increases their commitment towards their organization,
- It provides the employees with the opportunity to share and use their ideas and information in the business decision making,
- It helps in the cost reduction by minimizing supervision and control on employees,
- It improves the employee-management relations,
- It finally increases and improves business performance of the organization.

2.8 Major outcomes of employee participation in decision making

- Quality Improvement,

- Increase in employees' commitment with a sense of ownership having been involved in decision making,
- Improvement in the behavioral process,
- Increased adaptive capacity of the organization.

Self-Check – 2	Written test

Name……ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What are benefits of employee participation? (5 points)
2. What are major outcomes of employee participation in decision making? (5 points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Information sheet 3- Conducting the work with work place information

3.1 Collecting Information that meets the organization's needs

Information is constantly received, used, stored, prepared and distributed in the workplace. Everyone is involved-it doesn't matter if you manage stock, prepare meeting agendas or collect forensic specimens. Every workplace is different and requires different types of information to keep it running smoothly, efficiently and profitably. Different businesses collect and use different types of information. For example:

- A medical practice has records on patients, accounts and medical supplies
- A manufacturing company has customer databases, invoices and sales records
- A school or training center has records relating to students, employees, equipment and training materials. If you work in a cereal processing, you might use:
- Works records,
- Supplier records,
- Staff rosters,
- Staff records,
- Financial records, including daily takings, banking, invoices, accounts and petty cash records,
- Equipment maintenance records,
- Occupational health and safety records, and
- Booking records.

Every business must keep specific records for taxation purposes. Many also keep information such as books, journals, magazines, reports and photographs. Regardless of your job role, you need to be familiar with the type of information you will be using in the workplace.

3.2 Types of work place information

- Messages such as telephone and email
- Correspondence such as letters, memos, faxes and email
- Computer files such as reports and research
- Sales records such as monthly forecasts, targets achieved and sales reports
- Product information such as price lists, catalogues and brochures
- Forms such as claim forms, membership forms, order forms and leave forms

- Electronic databases such as customer records, financial records and library catalogues
- Accounts records such as invoices, credit notes and statements (from suppliers and to customers)
- Personnel records such as employee details, salary rates and annual leave
- Minutes of meetings
- Cash handling such as petty cash receipts, cash takings and register readings.

Other information might include:

- A library collection which could include books, magazines and reports
- A video/aural collection which could include film stock, video, dvd, cd, jpeg, mp3 and mpeg
- Promotional material such as catalogues, order forms, brochures and posters
- Other printed products such as manuals, labels and signs.

While you should be familiar with the range of information that is kept in your workplace, it is unlikely you will have to know about everything. For example, some records, such as personnel files, have restricted access, which means they are only available to authorized staff. You might only handle information such as:

- Messages
- Correspondence
- Sales records.
- Minutes of meetings
- Orders
- Promotional material for products and services

Most organizations store their records electronically (on a computer) and in paper form (hard copy). Some also keep image-based records. Image-based records can be stored on:

- A computer
- A cd or dvd (computer records transferred to a disk)
- Microfilm or microfiche, where copies of records are transferred to a plastic film that can be accessed via a special viewer.

3.3 Information dealing most common ways

3.3.1 Paper-based records

Examples are:

- ✓ Reports
- ✓ Project files
- ✓ Contracts
- ✓ Business letters
- ✓ Faxes
- ✓ Magazines, journals and newspapers
- ✓ Email messages and memos
- ✓ Diaries and other note-taking methods
- ✓ Minutes of meetings
- ✓ Forms

3.3.2 Information sources

Information comes from many different sources. If it is your job to collect workplace information, you need to know where to find it so that you can collect it and pass it on promptly to the relevant people. Information sources vary from workplace to workplace. Every organization does things differently. Part of finding your way around any new workplace is learning where to find the various types of information you need. The more familiar you are with your organization, the more efficient you will become. Information sources include:

- ✓ Colleagues such as team members or other staff
- ✓ Individual computers
- ✓ Computer networks or intranet (a private computer network inside a company or organization)
- ✓ Electronic archives
- ✓ Disks, tapes and other electronic storage
- ✓ Paper filing systems in drawers, filing cabinets, cupboards and rolling storage shelves
- ✓ Answering machines and services
- ✓ Newspapers, magazines and journals, in a library, in a news agency or delivered
- ✓ Mail and courier deliveries
- ✓ Noticeboards.

3.3.3 Files, folders and records

It is sometimes confusing when people talk about files. Most people mean a single document when they say a computer file. In contrast, a paper-based file generally refers to a collection of documents. Individual paper documents are not generally referred to as files.

3.4 Storing information

There are many ways of storing information. Again this varies from business to business. For instance, records can be centralized or decentralized. They can also be filed in different ways and stored in different types of equipment.

3.5 Storage equipment

There are many different types of storage equipment. When deciding how to store records, an organization must think about:

- How much space is needed
- How often the files are used
- How much security is required
- The cost of the storage equipment
- How to protect the files from the effects of dust, heat, light and humidity.

A small sports store may keep information about products and prices on a computer database, where it can easily be accessed each time a customer has a question. An insurance company may keep processed insurance claim forms in a locked filing cabinet.

3.6 Policies and procedures for collecting information

There are many things you need to know before collecting information. For example, every organization has policies and procedures related to collecting information. Make sure you familiarize yourself with these before you begin. Remember to ask your supervisor or a colleague for help if you are unsure. As a quick reference guide, you should note important aspects related to collecting information including:

- The organization's policies and procedures on collecting information
- Where information is located
- The people you need to deal with to obtain certain information

- Any other information vital to your work. Take your notes with you wherever you go at work and use them as a constant reminder. Record everything you think might be useful in your notes. You will be surprised how often you will refer to them and how much they will help you to remember important facts.

3.3.4 Information-handling policies and procedures should include guidelines about:

- ✓ What information should be kept and what should be discarded
- ✓ When and how specific types of information are collected
- ✓ Restricted access to some records
- ✓ The library check-out system
- ✓ Who to circulate specific types of information to
- ✓ Legal requirements such as privacy, occupational health and safety and anti-discrimination legislation
- ✓ Ethical principles
- ✓ Codes of practice
- ✓ Records maintenance.

3.7 Requests for information

You might be asked to retrieve paper-based or electronic information by a range of different people. They may include:

- Your supervisor
- Co-workers in your area or department
- Co-workers outside your direct area but within your organization
- Someone outside of the organization.

You might also need to locate a file for your own use; for example, to make copies of documents to include in a report. **You need to think about:**

- How urgent the request is
- What level of security the information comes under (for example, confidential, high security or general access)
- What information is required
- Where the information is located

- The best way to deliver the information.

3.8 Recording requests

It is useful to keep a record of any requests that have been made, in case you need to retrace your actions. There may be a specific procedure to follow for recording requests and actions. You may need to write down what someone asked you to do and when it was done. If there is no common procedure, you should write the details in your notes or daily work plan. This way you will know when you were asked for the file, who asked you, when they wanted it and what you did. Try to record:

- The file/record/information requested
- Who requested the information
- The date and time of the request
- The date and time you delivered the information
- Any problems you encountered.

3.8.1 Filing request forms

Some organizations use a formal system for information handling, especially for centralized, paper-based records. There may be a form to fill out when you need to obtain a file or other type of information. This might be:

- ✓ A paper form to be filled out and kept as a record
- ✓ An online form for external web-based access
- ✓ An intranet form for internal web-based access
- ✓ » a CD-ROMs or dvd form to be printed and faxed or handed to the designated person.

Example
This is an example of a paper-based form for the records department.

SMV Enterprises Ltd
Records department

File name	Date	/ /
File number (if known):		
Requested by:	Date	/ /
Processed by:	Date	/ /

3.9 Obtaining information efficiently

Obtaining information efficiently means:

- Knowing where to find correct, up-to-date information
- Collecting it according to the organization's policies and procedures
- Forwarding it to the correct people
- Responding within a given time line, which is sometimes specified or you may already know what it is.

If you don't know how to do some of these things, you can waste a lot of time. You may look in the wrong places, find unnecessary information, operate equipment incorrectly and deliver the information too late.

Prioritizing requests

Prioritizing requests involves deciding in what order you should carry them out. Always process the most urgent requests first and try not to keep people waiting unnecessarily.

Monitoring your progress

To be efficient you need to know how to monitor your progress. This means identifying:

- How much of each task you have achieved
- What you need to do to finish the task
- How long it will take you to do this
- How you handle urgent tasks. In a busy work environment, things may happen to alter your planned work schedule. For instance, people may decide they need information sooner than they thought or will ask for urgent information unexpectedly.

When lots of things are happening, you need to monitor your progress and keep track of your tasks. The easiest way to do this is to have a work plan. Your work plan should list all your activities and tasks and record:

- Who asked you for information
- What they asked you for
- What you have to do to obtain the information
- What you have to do with the information

- The agreed time line for the task.

You need to update your work plan regularly for it to be effective; for example, at the beginning of each week. Think carefully about everything you need to do and list it on your plan. Use your computer to prepare your plan so you can easily make changes when necessary.

Prioritizing your work

If the plan needs to be changed, write down the new information as soon as you get it. You can then see how this affects the overall plan. You may need to prioritize your work. This means working out which tasks are the most important and doing them first.

By managing your work in this way, you will always know:

- What you need to do
- When it is expected
- Who is still waiting for information

Which task is the most important? It becomes much easier to interact with your colleagues and answer their questions when you know exactly what you are doing for each of them. A work plan helps you work more efficiently. Monitoring your progress is an important aspect when obtaining information.

Keeping track of information Storing information in a centralized area allows everyone to access information easily, whether it is paper-based or in electronic form. However, systems must be in place to control the movement of information so everyone knows where a file is at any moment. Most organizations have specific procedures to keep track of their paper-based files. Some organizations have a policy about how long files can be held out of the filing system. You need to find out the procedures followed in your organization. They may include using:

- Out cards (or file markers), which are inserted in place of the file you have removed and record details such as date removed, file name, borrower and date to be returned
- Passing slips, which are filled out and given to the records supervisor if a borrowed file is passed directly onto another person without going back to the filing system
- A file register book to record the details of a removed file such as date removed, file name, borrower and date returned

- An electronic system, such as barcodes or other coding systems, to identify items taken for use and who is using them - a database stores information about what has been borrowed.

Self-Check – 3	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test: short answer

1. What are the techniques used in identifying equipment variations? (5pts)
2. Mention some steps of corrective action in response to equipment variations? (5 points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

4.1 Introduction

Having a safe and healthy physical work environment, including amenities and facilities, is critical to eliminating and controlling risk in the workplace. This includes ensuring the work environment, facilities and amenities are compliant with legislative and other identified requirements.

4.2 Work Layout

The layout of the workplace is required to allow persons to enter and exit the workplace and move within safely, both under normal work conditions and in an emergency.

2.2.1 Entry and Exit

Entries and exits are required to be safe to allow impeded access and egress for all workers, students and visitors including those with special needs. In particular:

- ✓ Entries and exits should be slip resistant under wet and dry conditions
- ✓ Aisles and walkways need to be at least 600mm wide and kept free of furniture or other obstructions
- ✓ Any walkways, boundaries or pathways shall be marked with 50mm wide with a contrasting colour e.g. White or yellow
- ✓ Open sides of staircases should be guarded with an upper rail at 900mm or higher and a lower rail
- ✓ Handrail should be provided on or at least one side of every staircase
- ✓ Separate entry and exits for mobile equipment e.g. Forklifts or trucks, and pedestrians are to be provided
- ✓ Power operated doors and gates should have safety features to prevent people from being stuck or trapped.
- ✓ Location of exits should be clearly marked and signs posted to show direction of exit doors to aid emergency evacuation

2.2.2 Housekeeping

Untidy workplaces may lead to injuries e.g. slips and trips, therefore good housekeeping practices are essential for all workplaces. For example:

- ✓ Spills on floors should be cleaned up immediately
- ✓ Walkways should be kept clear of obstructions
- ✓ Work materials should be neatly stored
- ✓ Any waste should be regularly removed
- ✓ Suitable containers for waste should be conveniently located and regularly emptied.

4.3 Work Areas

The layout of the work area should be designed to provide sufficient clear space between furniture, fixtures and fittings so workers can move freely without strain or injury also evacuate quickly in case of an emergency. In determining how much space is required, the following should be considered:

- The physical actions needed to perform the task
- The need to move around while working
- Whether the task is to be performed from a sitting or standing position
- Access to workstations
- The equipment to be handled and the personal protective equipment that may be worn to perform the work.
- Environmental factors including heat or noise may require an increase to the space, as will work activities that involve manual tasks or the use of equipment.

4.4 Floors and other Surfaces

Floor surfaces shall be suitable for the work area and be chosen based on the type of work being carried out at the workplace, as well as the materials used during the work process, the likelihood of spills and other contaminants, including dust and the need for cleaning. In general:

- Floors shall be free from slip or trip hazards e.g. Cables, uneven edges, broken surfaces

- Floor surfaces shall have sufficient grip to prevent slipping, especially in areas that may become wet or contaminated
- Anti-fatigue matting, carpet, shock absorbent underlay, cushion backed vinyl shall be provided for workers where static standing occurs
- Carpet shall be properly laid without loose edges or ripples and should be well maintained
- Floors should be strong enough to support loads placed on them.

4.5 Workstations

Workstations should be designed so workers are comfortable undertaking their task and allow for a combination of sit and standing tasks. For tasks undertaken in a seated position, workers should be provided with seating that:

- Provides good body support, especially for the lower back
- provides foot support, preferable with both feet flat on the floor, otherwise a footrest shall be provided
- Allows adequate space for leg clearance and freedom of movement
- Is fully adjustable to accommodate different size workers (e.g. Seat height, back rest height and back rest tilt adjustments) and should not tip or slip utilizing a five-point-base
- Chairs shall be fitted with castors for carpeted surfaces and glides or braked castors on hard surfaces

  Chairs are procured from facilities management division.

4.6 Lighting

Sufficient lighting is required to allow safe movement around the workplace and to allow workers to perform their job without having to adopt awkward postures or strain their eyes to see. Emergency lighting is to be provided for the safe evacuation of people in the event of an emergency. The following factors are to be taken into account:

- The nature of the work activity
- The nature of hazards and risks in the workplace
- The work environment
- Illumination levels, including both natural and artificial light

- The transition of natural light over the day
- Glare
- contrast
- Reflections.

Measures to prevent low or excessive levels of lighting, glare or reflection include:

- Providing additional lighting, such as a lamp on a movable arm
- Changing the position of existing lights
- Changing the location of the workstation
- Increasing or decreasing the number of lights
- Changing the type of lighting used e.g. From white light to blue light
- Changing the diffusers or reflectors on existing lights
- Using screens, visors, shields, hoods, curtains, blinds or external louvers to reduce reflections, shadows and glare.

4.7 Air Quality

Workplace are to be adequately ventilated which includes provision of fresh, clean air drawn from outside the workplace, uncontaminated from flues or other outlets and be circulated through the workplace. Workplace inside buildings may have natural ventilation, mechanical ventilation or air conditioning. An air-conditioning system should:

- Provide a comfortable environment in relation to air temperature, humidity and air movement
- Prevent the excessive accumulation of odours
- Reduce the levels of respiratory by-products, especially carbon dioxide, and other indoor contaminants that may arise from work activities
- Supply an amount of fresh air to the workplace, exhaust some of the stale air as well as filter and recirculate some of the indoor air.

Natural ventilation should consist of permanent openings, including windows and doors, that:

- In total are the size of at least five per cent of the floor area of the room
- Are open to the sky, an open covered area or an appropriately ventilated adjoining room.

Natural ventilation may be assisted by mechanical ventilation. Enclosed workplaces should be supplied with comfortable rates of air movement (usually between 0.1 m and 0.2 m per second).

Air-conditioning and other ventilation systems should be regularly serviced and maintained in accordance with manufacturer's instructions. Cooling towers that form part of many air conditioning systems are to be inspected, tested and treated as per legislative requirements. Work processes that release harmful levels of airborne contaminants (e.g. lead fumes, acid mist, solvent vapour) are to be undertaken with specific control measures in place to remove them at the source, e.g. fume cupboards.

Table1. Examples of outlines of the recommended illumination standards

Class of task	Recommended illuminance (lux)	Characteristics of the activity/interior	Examples of types of activities/interiors
Movement and orientation	40	For little-used interiors with visual tasks limited to moving around.	Corridors; cable tunnels; indoor storage tanks; walkways.
Rough intermittent	80	For interiors used intermittently, with visual tasks limited to movement, orientation and coarse detail.	Workers change and locker rooms; live storage of bulky materials; dead storage of materials needing care; loading bays.

Normal range of tasks and workplaces

Simple	160	Continuously occupied interior with visual tasks (coarse detail only.) Occasional reading of clearly printed documents for short periods.	Waiting rooms; entrance halls; canteens; rough checking of stock; rough bench and machine work; general fabrication of structural steel; casting concrete; automated process monitoring; turbine halls.
Ordinary or moderately easy	240	Continuously occupied interiors with moderately easy visual tasks with high contrasts or large detail.	School boards and charts; medium woodworking; food preparation; counters for transactions; computer use.
Moderately difficult	320	Areas where visual tasks are moderately difficult with moderate detail or with low contrasts.	Routine office tasks (e.g. reading, writing, typing, enquiry desks.)
	400		Inspection of medium work; fine woodwork; enquiry points; car assembly.
Difficult	600	Areas where visual tasks are difficult with small detail or with low contrast.	Drawing boards; most inspection tasks; proofreading; fine machine work; fine painting and finishing; colour matching.
Very difficult	800	Areas where visual tasks are very difficult with very small detail or with very low contrast.	Fine inspection; plant retouching; fine manufacture; grading of dark materials; colour matching of dyes.

4.8 Heat and cold

Refer to the thermal comfort guidelines for further information on managing health and safety risks associated to hot and cold environments. Workers carrying out work in extreme heat or cold must be able to carry out work without a risk to their health and safety so far as is reasonably practicable. It is important to distinguish between a condition that threatens health and safety, and a feeling of discomfort.

The risk to the health of workers increases as conditions move further away from those generally accepted as comfortable. Heat strain can arise from working in high air temperatures, exposure to high thermal radiation or high levels of humidity, such as those in foundries, commercial kitchens and laundries. Hypothermia arises when a person gets an abnormally low body temperature as a result of exposure to cold environments. Both these conditions are potentially fatal.

Both personal and environmental factors should be considered when assessing the risk to workers' health from working in a very hot or cold environment. Personal factors include the level of physical activity, the amount and type of clothing worn, and duration of exposure. Environmental factors include air temperature, the level of humidity, air movement and radiant heat.

Self-Check – 4	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test: Short Answer Questions

1. List and discuss on things that are critical in eliminating and controlling risk in the workplace? (5 points)
2. Extreme heat or cold must be able to carry out work without a risk to workers health and safety. Would give more explanation for this saying? (5 points)
3. Listdown at least four measures to prevent low or excessive levels of lighting, glare or reflection? (5 points)

Note: **Satisfactory rating - 10 points Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

Information Sheet 5 - Identify, recording and reporting the non-conformance in inputs, process, product and/or service

5.1 Introduction

A non-conformance (or 'nonconformity') means that something went wrong. The non-conformance could be in a service, a product, a process, goods from a supplier, or in the management system itself. It occurs when something does not meet the specifications or requirements in some way.

5.2 Purpose and scope

This procedure ensures that all non-conformances are identified and recorded, and that the appropriate corrective action is taken to rectify all identified non-conformances, preventing their reoccurrence in the future.

5.3 Responsibility

- All members of staff are responsible for notifying the environmental manager of any identified non-conformances.
- The environmental manager is responsible for the completion of Non-Conformance Reports and for determining and implementing corrective action.
- Once the corrective action has been completed the Environmental Manager is to undertake a verification check to ensure that corrective action has been effective.

5.1 Procedure

- All identified non-conformances are to be reported to the environmental manager.
- All identified non-conformances are to be recorded on a non-conformance report form (see attached).
- The source or cause of the non-conformance is being identified, allowing for the development of appropriate and effective corrective action.

- Corrective action is to be documented, together with an agreed timeframe for implementation.
- A review of the effectiveness of the corrective action will be undertaken by the environmental manager.
- If the non-conformance persists after the implementation of corrective action alternative solutions are to be examined until the closure of the non-conformance can be successfully achieved.
- On the successful closure of the non-conformance, the non-conformance report will be signed off by the environmental manager.
- Reoccurring non-conformances, significant deviations from legislation, procedures or environmental policy or non-conformances that pose an environmental risk will be reported to senior management for further investigation.

5.2 Associated documents - non-conformance report form

Non-Conformance Report					
Non-Conformance No:		Date recorded:			
Identified by:		Department/Area:			
Description of Non-Conformance:					
Cause of Non-Conformance:					
Proposed corrective actions to be taken to prevent recurrence:					
Auditor Name:		Environmental Representative:		Date for action to be completed by:	
Evidence provided to demonstrate closure of Non-Conformance:					
Auditor Name:		Non-Conformance Closed: (Yes/No)		Date:	
Further information:					

Corrective actions are steps that are taken to remove the causes of an existing nonconformity or undesirable situation.

Self-Check – 5	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test: Short Answer Questions

1. Define the term non-conformance? (5 points)
2. What is the purpose of identifying, recording and reporting the non-conformance in inputs, process, product and services? (5 points)

Note: **Satisfactory rating - 5 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

6.1 Introduction

Quality is defined as the degree to which the product or the service performed meets the customer's expectations. A quality management plan is a document or set of documents that describe the standards, quality practices, resources, and processes pertinent to an organization.

6.2 Corrective and preventive action

6.2.1 General

The quality management plan shall document the procedures to be utilized to implement corrective and preventive actions. Corrective or preventive action taken to eliminate actual, or minimize potential, design non-conformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered. The project manager and designer shall implement and record any changes to the documented procedures resulting from corrective and preventive action. These changes shall be documented utilizing the Interactive communications procedure.

6.2.2 Corrective action

A Corrective action is an action or solution meant to reduce or eliminate an identified problem. The corrective action procedures to eliminate actual non-conforming design shall include:

- ✓ The effective handling of observations and reports of design non-conformities, including developing interim measures if warranted, to correct an actual non-conformity.
- ✓ Conducting an investigation into the root cause of non-conformities relating to the design, process and Quality Management System, and recording the results of the investigation.
- ✓ Determination of the corrective action needed to eliminate the cause of the design nonconformities.
- ✓ Application of measures to determine that corrective action has been taken and that it is effective.

6.2.3 Preventive action

A preventive action is an action taken to remove or improve a process to prevent potential future occurrences of a non-conformance. The procedures for preventive action to minimize non-conformities shall include:

- ✓ The use of appropriate sources of information relating to the quality of the design (such as concessions, audit results, quality records, service reports, etc) to detect, analyze, and eliminate potential causes of non-conformities;
- ✓ Determination of the steps needed to deal with any problems requiring preventive action; Initiation of preventive action and appropriate follow-up reviews to determine that it is effective;
- ✓ Confirmation that relevant information on actions taken is submitted for factories and consultant management review.

6.3 Control of quality records

The quality management plan shall document procedures for identification, collection, indexing, access, filing, storage, maintenance, and disposition of quality records. Records may be in the form of any type of media, such as hard copy or electronic media. The Quality Management Plan shall be maintained to demonstrate conformance to specified requirements and the effective operation of all quality documentation. The quality management plan shall be legible and shall be retained in such a way that they are readily retrievable in files that provide a suitable environment to prevent damage, deterioration or loss.

6.4 Quality audits

A quality audit is a systematic, independent examination and review to determine:

- Whether quality activities and related results comply with quality management Plans
- Whether these quality management plans are implemented effectively and are suitable to achieve the quality objectives.

The quality management plan shall refer to the audit procedure that documents the quality audit process. The audit procedure documents the audit criteria, audit schedules, and the

individuals performing the audit. The project Manager shall take timely corrective action on deficiencies found during the audit.

6.5 Training

The quality management plan will document procedures for identifying training needs and provide for the training of all personnel performing activities affecting quality. Personnel performing specific assigned tasks shall be qualified on the basis of appropriate education, training and/or experience, as required. Appropriate records of training shall be maintained. In general, the quality management plan will document procedures and elements like handling, storage, packaging, and delivery of the design.

6.5.1 Handling

Provide methods of handling its design to minimize damage, deterioration, loss or incorrect identification.

6.5.2 **Storage**

The use designated areas or files to minimize damage or deterioration to documents, plans, studies or reports prior to use or delivery. Appropriate methods for authorizing receipt to and dispatch from such areas shall be stipulated.

6.5.3 **Packaging**

The control packaging and labeling processes to the extent necessary to conform to specified requirements. **Preservation:** The application of appropriate methods for preservation and segregation of the documents, plans, studies or reports when they are under its control.

6.5.4 **Delivery**

The protection of the documents, plans, studies or reports after final checking prior to shipment. Where contractually specified, this protection shall be extended to include delivery to the destination

Self-Check – 6	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test: Short Answer Questions

1. Explain on corrective actions that can maintain quality standards? (5 points)
2. Define what quality auditing is? (5pts)
3. Why quality management plan will document elements like handling, storage, packaging, and delivery? (5pts)

Note: **Satisfactory rating - 16 points** **Unsatisfactory - below 16 points**

You can ask you teacher for the copy of the correct answers.

Information Sheet 7- Raising quality issues

7.1 Introduction

Food processing organizations have established food processing quality policy to achieve production of quality products that fully satisfy their customers' needs. So how can you improve quality at your company? Here are 5 steps you can take to put you on the right path.

7.2 Following quality policy

All departments must pursue the right way to perform their jobs based on a firm policy in order to realize an enterprise that is worthy of trust throughout the world. All employees of the food processing continue to strive to do every job right the first time toward the goal of becoming a world leader in quality. Here bellow is food processing **quality policy:**

- Places top priority on environmental management and product safety systems.
- Provides products and services to customers that exceed their expectations by putting them first.
- Aims to be a world leader in quality by doing every job right the first time.

7.3 Efforts to improve product quality

7.3.1 Make a commitment.

A company's commitment to quality had to come from the top, and it had to be reinforced over and over again. Unless a business views quality as its single, non-negotiable goal, workers will inevitably feel the need to make tradeoffs and quality will slip. The notion of "**constancy of purpose**" means that quality decisions are not situational." "End of month quality is the same as beginning of month. It means that the long term benefit of the organization is not sacrificed to hit quarterly targets." So are you ready to commit? If you are, you should tell your staff—and then think about how you will handle the first conflict between your stated objective and a pressing deadline or an attractive short cut.

7.4 Track mistakes.

If you are going to commit to quality, first you must define exactly what quality is. For manufacturers, this process involves statistical quality control, the process of setting a product's specifications and then sampling a small number of units from the production line to see how closely they measure up to those specs. Standards are set and, if too much deviation occurs (or if quality appears to be trending in the wrong direction), the manufacturing process is altered.

Tracking quality is admittedly more difficult in a service business, and efforts by groups such as the International Organization for Standardization (known as ISO) to create meaningful benchmarks beyond manufacturing have had mixed results. One way to gauge customer satisfaction (and, by extension, the quality of your service) is by tracking what is called a net promoter score. A net promoter score keeps tabs on the number of customers who would recommend a business to their friends. A customer who answers

- 9 or 10 is seen as a promoter;
- 7 or 8 is seen as passive; and
- 6 or lower is seen as a detractor.

By subtracting the number of detractors from the number of promoters, a company arrives at its net promoter score. Address quality Issues on a Case-by-Case Basis. Fully understand the reason for product returns and take the appropriate steps to address it.

7.5 Invest in training

An old saw of the quality movement is that any business with a quality control department is doomed to poor performance, for it has demonstrated to every other employee that quality is not his or her chief concern. Instead, quality experts recommend that businesses train workers at all levels to look for ways to improve quality and to ameliorate problems.

Training takes on several dimensions. For starters, you should set up a new-employee initiation program that trains workers to focus on quality issues from their first day on the job.

Whether you hand train duties to your employees, take them on personally, or some combination of the two approaches, it's important that you provide workers with a history of the company through the lens of quality. Let them know what problems you have had in the past, how you corrected these problems, and where your company stands with respect to its quality goals today. You should also go over your definition of quality in detail, and show them how you measure quality. Finally, train workers to see the connection between their actions and, more broadly, their work ethic, and the company's overall performance. By tying individual behavior to an overall system of work, and then showing where that system can, on occasion break down, you will be giving workers the information they need to be good stewards of your business.

7.6 Organize quality circles

Your staff members may roll their eyes at the introduction of such a dated technique, but organizing employees into quality circles can be an effective way to identify and address problems. Simply put, quality circles are groups of employees who are encouraged to assess processes and recommend improvements, all with the goal of promoting quality, efficiency, and productivity. The concept was developed by Deming in post-war Japan, and made its way to the United States in the late 1970s. At one point, half of all large corporations had adopted quality circles, but then interest in them faded.

That's a shame. Quality circles, by any other name, are teams of workers who are given the authority and responsibility for making a business better. To succeed, experts say that participation in a quality circle should be voluntary; circles should draw members from all corners of a company; and the circle should set its own agenda (rather than pursuing a company owner's agenda.)

Once you have invited workers to join a quality circle, provide them with adequate resources to pursue their analysis, and schedule a time in the future at which they may present their findings. It is important that you act on their recommendations, even if the group's conclusion is not necessarily one you would have drawn yourself. Remember, the purpose of the exercise is less to solve a particular problem than it is to engage workers in the process of finding and addressing concerns. Moreover, you should be tracking

customer complaints or product defects on a regular basis, so if the circle's recommendations do not produce the desired result, you'll know it, and be able to act.

7.7 Have the right attitude.

Too many people turn the quest to improve quality into something oppressive. No less an authority than Deming rejected the idea that the quality management had to be dreary and involve a lot of negativity. "The prevailing system of management has crushed fun out of the workplace," Deming moaned in an interview in the 1990s.

This attitude is not necessarily easy to adopt and runs afoul of some of the basic management practices we take for granted. For example, Deming was not a fan of performance reviews, as the writer John Case has explained. "[I]f your evaluations are fair, you will determine that half your workers (by definition) are below average, and you will tell them so," Case writes. "Result: half the work force is instantly discouraged and demoralized, and any sense of common purpose is undermined."

Rather than pointing out inadequacy wherever it might be found, Deming believe that the job of managers was to frame the pursuit of quality as an interesting, noble, and worthwhile goal. If you are to truly improve quality at your business, whether you manufacture products, distribute goods, or perform a service for your clients, your first step (and also the hardest) is to resist the temptation to dwell on your company's flaws and instead rally your team around the cause of rooting them out.

Self-Check – 7	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. Write things fulfilled in a safe working environment? (5 points)
2. Write work place requirements that the worker should be ensure when conducting the work? (5 points)
3. Would you list down three food processing quality policies? (5 points)

Note: **Satisfactory rating - 9 points** **Unsatisfactory - below 5 points**

You can ask you teacher for the copy of the correct answers.

Operation sheet 6 - Corrective action

A **Corrective action** is an action or solution meant to reduce or eliminate an identified problem. **Procedures of corrective action to eliminate actual non-conforming design**:

- Set the effective handling of observations and reports of design non-conformities, including developing interim measures if warranted, to correct an actual non-conformity.
- Conduct an investigation into the root cause of non-conformities relating to the design, process and quality management system, and recording the results of the investigation.
- Determine the corrective action needed to eliminate the cause of the design nonconformities.
- Apply measures to determine that corrective action has been taken and that it is effective.

LAP Test	Demonstration

Name---------- ID---------- Date----------

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **1** hour. The project is expecting you to do it.

Task Objectives/Demands: in accomplishing activities required for this project the student will be able to:

Task	Test
1	Perform procedures of corrective action to eliminate actual non-conforming design.

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