Fruit and Vegetable Processing

Level-I



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Module Title: - Carrying Out Fruit & Vegetable Manual Handling Task

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Introduction to the Module

This module covers the knowledge, skills and attitude required to participate in processes to identify and assess manual handling, contribute to manual handling risk minimization and plan and conduct manual handling.

LG #1	LO #1 Participate in Processes to Identify and Assess Manual Handling

Instruction Sheet

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

- Introduction to the module
- Accessing and adhering workplace information sources
- Identifying manual handling components with work policies and procedure
- Identifying and reporting manual handling risks and incident procedures.
- Assessing Risks within level of responsibility

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:

- Access and adhere workplace information sources
- Identify manual handle components with work policies and procedure
- Identify and report manual handling risks and incident procedures.
- Assess risks within level of responsibility

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

1.1 Accessing and adhering workplace information sources

1.1.1. What is workplace information?

Each workplace relies on the exchange of information to carry out its daily business. Information is passed from employee to employee, customer to employee, supervisor to team member, supplier to customer, and so on. Dealing effectively with information and records is necessary and important for all organizations. The quantity and variety of information kept by an organization can be huge. Information needs to be sorted into related groups so that it can be stored easily and found when needed. An organization's success depends largely on how well it manages its information.

You need to be familiar with the type of information used in your job and the way records are organized so you can collect, file, store and find information quickly and easily. Finding and using information is a large part of many jobs, so knowing how to deal with it is an important workplace skill. Being confident and efficient in this skill helps you and your organization succeed.

In this section you will learn about:

- Collecting information that meets the organization's needs
- Using equipment and technology to obtain information
- Maintaining security and confidentiality when handling information

1.1.2. 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 & sales records
- A school or training center has records relating to students, employees, equipment and training materials.

- If you work in a sport and recreation facility, you might use:

- Customer records
- Supplier records
- Equipment maintenance records
- Booking records
- Staff rosters
- Occupational health and safety records
- Financial records, including daily takings, banking, invoices, accounts and petty cash records
- Staff records.

Every business must keep specific records for taxation purposes. This is the law. Many also keep information such as books, journals, magazines, reports and photographs. Where you the find the information varies according to what you are looking for and the business tasks involved. For example, a small business may have one central paper filing system, while a large organization may have archived paper and electronic files stored away from the office. Regardless of your job role, you need to be familiar with the type of information you will be using in the workplace.

1.1.3. Types of information

The types of records held by an organization vary depending on the business. Music stores have a large amount of information on products, such as CDs and DVDs, and prices. Local government bodies responsible for public facilities, such as parks and public toilets, keep records of money spent on public works, contractors and financial transactions.

- Common types of workplace information include:
  - ✓ 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.

1.1.4. 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.



Figure 1.1: Workplace sources of information (https://www.youtube.com/watch?v=dp3GYCOTUhI , Accessed date: January 17, 2023)

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 comes from a variety of sources such as formal and informal sources.

a) Formal sources

Formal sources of information can come from within or outside the organization and include:

- **Internal**
  - ✓ Computer systems (human resource, accounting, clients, inventory, purchasing)
  - ✓ Staff records
  - ✓ Accounting records
  - ✓ Annual reports
  - ✓ Long range planning records
  - ✓ Company reports
  - ✓ Business documents (letters, minutes of meetings)
- **External**
  - ✓ Professional journals
  - ✓ Books
  - ✓ Surveys
  - ✓ Industry or government reports

b) Informal sources

- ✓ Information from informal sources can include conversations with colleagues at lunch or from friends or other associates external to your company.



Figure 1.2: Workplace sources of information
(https://www.youtube.com/watch?v=Z06GoEyt9jk, Accessed date: January 17, 2023)

1.1.5. Workplace information procedures

Policies and procedures for dealing with workplace information may differ from workplace to workplace. For example, legal offices regularly receive updated legislative information that has to be filed with appropriate records as soon as it is received. A busy wholesale company needs to deal with large volumes of order forms, invoices and receipts on a daily basis.

Other workplaces rely on the riling system to work efficiently as part of their daily activities. For example, medical facilities need to be able to find patient records, update them quickly and file them immediately so the record is always readily accessible. Similarly, a library needs to update its records quickly to keep track of items that are borrowed, late, lost, on hold, on order, damaged and so on. This means that the filing systems in all these organizations need to be extremely well-organized and well maintained.

You should refer to the organization's workplace policies and procedures or workplace user manual to explain the specific procedures for filing and storing information. If you are not certain of your organization's filing procedures, make sure you ask your supervisor or manager to show you clearly. Remember to take notes as you go to refer to later.

1.2 Identifying manual handling components according to company policies and procedures

1.2.1. Manual handling components

Manual handling is defined as: "any activity requiring a person to lift, lower, push, pull, carry, throw, move, restrain, hold or otherwise handle any animate, or inanimate, object". This includes a wide range of activities: For example:

- Packing in an apple shed or supermarket
- Lifting boxes from a conveyor to a pallet
- Cleaning tasks
- Operating machinery
- Construction tasks
- Using workbenches for assembly tasks
- Using hand tools
- Handling hospital patients.

1.2.2. Risk factors in performing manual tasks

There are a number of factors that may make a manual task hazardous, particularly for the development of musculoskeletal disorders. Some of these are known to have direct effects on the body, while others contribute to the risk by making the task more difficult to perform. These factors have been classified as direct and indirect risk factors.

A. **Direct risk factors**

- Risk factors that have a direct effect on the body include:
  - ✓ Actions and postures (including awkward postures, sustained postures and repetitive movement);
  - ✓ Forces and loads (including forceful exertion); and
  - ✓ Exposure to vibration (including whole-body and hand-arm vibration).

B. **Indirect risk factors**

- Risk factors that can make the task more difficult to perform include:
  - ✓ The working environment (eg poor lighting and cool temperatures);
  - ✓ Systems of work, work organization and work practices (eg inadequate rest breaks and unfamiliarity of the task); and worker characteristics (eg physical limitations).

- The above risk factors may interact and increase the overall risk. The overall risk of developing a musculoskeletal disorder will increase if:
  - ✓ A direct risk factor level is high (eg high forces are required to lift an object);
  - ✓ The task involves being exposed to more than one direct risk factor (eg lifting heavy loads in awkward postures);
  - ✓ Indirect risk factors are present and interact within a task (eg lifting loads in awkward postures in a cool environment); or
  - ✓ If there are several hazardous manual tasks that an individual is exposed to during their work shift or as part of their job.

1.2.3. Effective manual handling procedures

- You need to consider four factors:
  1. the nature of the task itself;
  2. the weight and type of load being moved;
  3. the ability of the individual person carrying out the task;
  4. The environment in which the activity is being carried out

1.2.4. Manual handling legal obligations

The Manual Handling Operations Regulations 1992 are the main piece of legislation dealing with manual handling. It sets out the main duties for employers and employees. The order of controls contained within the regulation explains that first you need to avoid manual handling. When this is not possible you need to assess and reduce the risk. There isn't a weight limit for manual handling within the regulations. Instead an assessment of the tasks should be carried out to ensure the safety and health of employees.

- Employees also have a responsibility to
  - ✓ Follow safe systems of work
  - ✓ Make proper use of equipment provided for their safety
  - ✓ Co-operate with their employer on health and safety matters
  - ✓ Inform the employer if they identify hazardous manual handling activities
  - ✓ Take care to ensure their activities do not put themselves or others at risk.

1.2.5. Manual handling risks

Manual handling means any activity requiring the use of force exerted by a person to lift, lower, push, pull, carry or otherwise move, hold or restrain a person, animal or thing. Manual handling also includes any activity involving repetitive and/or forceful movements (e.g. keying data into a computer; using a screwdriver) and any activity where the person must maintain constrained or awkward postures (e.g. driving a truck; leaning over to make beds). Examples of manual handling activities include:



Figure 1.3: Manual Handling - Dos and Don'ts at the Workplace [Info-graphic]



Figure 1.4: Manual handling techniques

- ✓ **Hazard:** means anything that may result in injury or harm to health.
- ✓ **Activity:** refers to the movements by or postures of an employee at any given time in order to perform a task.
- ✓ **Task:** refers to any sequence of activities performed by an employee as part of their job.

1.3. Identifying and reporting manual handling risks and incident procedures.

1.3.1. Risk factors in manual handling

The weight of an object is not the only risk factor. A box lifted from the floor, for example, is more likely to cause injury than a box of the same weight lifted from waist height where no bending is required. A number of factors can increase the risk of injury, including:

- ✓ Size, shape and weight of objects (if carried or held) and forces required (if pushed, pulled or restrained);
- ✓ Sudden unexpected or jarring movements;

- ✓ Awkward movements, such as twisting, bending, over-reaching, especially if combined with load handling;
- ✓ Static postures, like holding the body or part of the body in a fixed position for a long time; and
- ✓ Personal factors, such as age, physical dimensions and any disabilities the person may have.

- These risk factors are influenced by:
  - ✓ How long and how often the tasks are performed (e.g. Repetitive movement);
  - ✓ The way work is organized, such as one employee performing all manual handling tasks instead of tasks being shared by several employees;
  - ✓ Design and layout of work environment; and
  - ✓ The degree of familiarity with the task and associated training.

1.3.2. Reporting manual handling risks

Accident reporting systems should collect information such as the equipment used, the injury involved, the part of body injured and how the injury was caused. Guidance on what information should be collected on each injury can be found. Describing and reporting occupational injuries and disease.

Manual handling should be recorded as a cause of injury. The 'cause of injury' information is usually referred to as the "Mechanism of Injury". Within this category of information, manual handling as a cause of injury is usually referred to as either:

- Repetitive movement with low muscle loading (this refers to Repetitive Strain Injury and Occupational Overuse Syndrome); or
- Other muscular stress (this refers to injuries resulting from lifting, lowering, carrying, pushing and pulling).

1.4. Assessing risks within level of responsibility

Risk assessment is a process which involves gaining a detailed understanding of a task being carried out, collecting all relevant technical details of the task, identifying if there are risk factors/hazards present, exploring what options or solutions are available to reduce or eliminate the risk factors/hazards and putting a plan in place to introduce the agreed control measures.

- The Manual Handling Operations Regulations 1992 outlines the requirement to:

- ✓ **Avoid** the need for hazardous manual handling, so far as is reasonably practicable;
- ✓ **Assess** the risk of injury from any hazardous manual handling that can't be avoided; and
- ✓ **Reduce** the risk of injury from hazardous manual handling, so far as is reasonably practicable.

Both regular and irregular activities associated with the task or activity should also be taken into account when carrying out the general risk assessment, as these may reveal occasional or sporadic manual handling operations that need to be assessed in more detail, i.e. by undertaking a, more detailed, manual handling risk assessment.

Where manual handling operations cannot be avoided, employers have a duty to make a suitable and sufficient assessment of the risk to health**.**

The outcome of the risk assessment process should be to reduce risk to an insignificant or low level, so far as is reasonably practicable, by use of suitable control measures. Control measures or alternative methods should be continually refined to achieve this. The manual handling assessment should take into account a range of relevant factors, that exist or are foreseeable, and of which the manual handling operation might comprise. These include:

- ✓ The tasks;
- ✓ The loads;
- ✓ The working environment;
- ✓ Individual capability;
- ✓ Handling aids and equipment; and
- ✓ Work organization factors.



Figure 1.5: Manual handling operations regulations, 1992

- The five steps in a manual handling risk assessment process are explained below.

Steps 1 - Identify manual handling operations

A general risk assessment of the task or activity should identify if there are any manual handling operations associated with that task or activity. If so, the assessor should use the Manual handling of loads. Those involved in the manual handling risk assessment process should consider the hazards and risks involved in any activity or task and decide what can be done to reduce the risks.

Consequently, those carrying out risk assessment require knowledge of the work area and the types of task involved. They should also consult personnel who undertake the tasks, as they are often aware of problems and ways of avoiding them (however, please note, the overall responsibility for suitable and sufficient assessments remains with the line manager). It is important, when carrying out manual handling risk assessment, to take into account both the regular activities that are undertaken, and any irregular activities that may foreseeably occur during manual handling operations.

- ✓ **Regular activities:** In such cases, personnel are exposed to frequent and / or repetitive (continuous, hourly, daily, weekly or monthly) manual handling hazards, e.g. deliveries of gas bottles, food and consumables; distribution of books, installation of computers etc.
- ✓ **Irregular activities:** These are activities that are carried out infrequently and sometimes at irregular times. Consequently, if not adequately controlled, these activities may present a higher risk of injury due to for example, insufficient personnel being available or the activity is subject to a time constraint. Examples could include a change to an office layout or a relocation of premises due to fire or flood damage. Even though the activities may be irregular in frequency the same level of duty applies to reduce the level of risk from any manual handling operation as for a regular occurring activity.

Step 2 - Identify those carrying out manual handling operations

Any staff that might be expected to carry out manual handling operations, whether regularly or infrequently should receive suitable training, instruction and adequate supervision in order to enable them to carry out manual handling operations safely and effectively, using the correct lifting and handling techniques and appropriate equipment where necessary and as outlined in the risk assessment for that particular task. This should also extend to staff, whose main duty

does not include manual handling but who could occasionally be expected to carry and lift certain items. Individuals have different physical capabilities and characteristics and these should be taken into account when assessing the task

Existing or pre-existing physical conditions may affect a person's ability to carry out manual handling tasks and should be taken into account. Similar consideration should also be given to changes in the capabilities of individuals. For example, a new or expectant mother; a person recuperating from a recent surgical operation; anyone suffering from a recent back injury or MSD; or, a new health condition that could affect a person's ability to lift safely.

Step 3 - Evaluate risk from manual handling operations

Evaluate the level of risk from the manual handling operation(s), and if any controls are in place to reduce the level of risk, decide whether these are adequate or if more should be done, i.e. carry out a more detailed risk (manual handling) assessment. Risk of injury can be reduced by consideration of the following hierarchy of control options;

- **Eliminating** the need for handling at source (e.g. delivery of goods by supplier to point of use);
- Can the task be **automated or mechanized** , e.g. by bulk delivery of gas which is then piped to the point of use from a central storage tank , thus avoiding the manual handling of gas cylinders; or, the use of pallet trucks, sack trucks and trollies to transfer loads rather than carrying them?;
- **Re-arrange** the workplace, e.g. store heavier items at waist height; store more commonly used items near to point of use; purchase smaller unit sizes if possible; and
- Provide **training**, **instruction** and **supervision** to staff in moving and handling techniques so that they are able to carry out manual handling operations more safely and identify any hazards that might arise

Step 4 - Implement the results of the evaluation

If, following the evaluation, any remedial actions are required; the following points should be implemented:

i. Remedial steps should be listed in order of priority

ii. A responsible person with the appropriate authority to be allocated to implement any controls.
iii. A target date to be set for implementation of those controls.
iv. An indication of whether or not the controls have been completed.
v. Employees to be informed of the results, procedures to be followed and the supervisory requirements (if any).
vi. Effectiveness of the change(s) to be monitored. It may be necessary to review and revise any changes as necessary if circumstances change.

Step 5 - Record the results of the manual handling risk assessment

All significant findings from the risk assessment must be recorded. The risk assessment form should include the following details:

- ✓ Name and details of the person carrying out the assessment;
- ✓ The significant findings of the assessment;
- ✓ Any recommended remedial actions;
- ✓ The person responsible for carrying out the recommended remedial actions; &
- ✓ The date of the assessment and the review date.

Who should carry out a manual handling risk assessment?

A competent person should carry out the manual handling risk assessment. Such a person will have adequate knowledge, training and experience to carry out the task properly and objectively. Depending on the situation, this may be you or somebody else within the business or you may feel the need to seek external expertise. You must be satisfied that the person conducting the manual handling risk assessment is capable of doing so properly and effectively.

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 I: Matching

A	**B**
1. External	A. Annual reports
2. Internal	B. conversations with colleagues
3. Informal sources	C. Books
	D. Workplace

Test II: Short Answer Questions

1. Write down all types of workplace information?
2. Write three basic types of information that managers need?
3. What are the responsibilities of employees?
4. Write the effective manual handling procedures?
5. Write the two risk factors?
6. What is risk assessment?
7. Write the five stages of manual handling risk assessment process?
8. Define the following terms?
   - ✓ Task
   - ✓ Activity
   - ✓ Hazard
   - ✓ Manual handling
   - ✓ Irregular activities
   - ✓ Regular activities

LG #2	LO #2 Contribute to Manual Handling Risk Minimization

Instruction Sheet

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

- Making and fitting equipment for use
- Using personal protective to handling risk

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:

- Make and fit equipment for use
- Use personal protective to handle risks

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 2

2.1. Making and fitting equipment for use

Work equipment is any machinery, appliance, apparatus, tool or installation for use at work (whether exclusively or not). This includes equipment which employees provide for their own use at work. The scope of work equipment is therefore extremely wide. The use of work equipment is also very widely interpreted and '...means any activity involving work equipment and includes starting, stopping, programming, setting, transporting, repairing, modifying, maintaining, servicing and cleaning.

- **What you must do?**

If your business or organization uses work equipment or is involved in providing work equipment for others to use (e.g. for hire), you must manage the risks from that equipment. This means you must:

- ✓ Ensure the equipment is constructed or adapted to be suitable for the purpose it is used or provided for
- ✓ Take account of the working conditions and health and safety risks in the workplace when selecting work equipment
- ✓ Ensure work equipment is only used for suitable purposes
- ✓ Ensure work equipment is maintained in an efficient state, in efficient working order and in good repair
- ✓ Where a machine has a maintenance log, keep this up to date
- ✓ Where the safety of work equipment depends on the manner of installation, it must be inspected after installation and before being put into use
- ✓ Where work equipment is exposed to deteriorating conditions liable to result in dangerous situations, it must be inspected to ensure faults are detected in good time so the risk to health and safety is managed
- ✓ Ensure that all people using, supervising or managing the use of work equipment are provided with adequate, clear health and safety information. This will include, where necessary, written instructions on its use and suitable equipment markings and warnings.

- ✓ Ensure that all people who use, supervise or manage the use of work equipment have received adequate training, which should include the correct use of the equipment, the risks that may arise from its use and the precautions to take
- ✓ Where the use of work equipment is likely to involve a specific risk to health and safety, ensure that the use of the equipment is restricted to those people trained and appointed to use it
- ✓ Take effective measures to prevent access to dangerous parts of machinery. This will normally be by fixed guarding but where routine access is needed, interlocked guards (sometimes with guard locking) may be needed to stop the movement of dangerous parts before a person can reach the danger zone. Where this is not possible – such as with the blade of a circular saw – it must be protected as far as possible and a safe system of work used.
- ✓ Take measures to prevent or control the risks to people from parts and substances falling or being ejected from work equipment, or the rupture or disintegration of work equipment
- ✓ Ensure that the risks from very hot or cold temperatures from the work equipment or the material being processed or used are managed to prevent injury
- ✓ Ensure that work equipment is provided with appropriately identified controls for starting, stopping and controlling it, and that these control systems are safe
- ✓ Where appropriate, provide suitable means of isolating work equipment from all power sources (including electric, hydraulic, pneumatic and gravitational energy)
- ✓ Ensure work equipment is stabilized by clamping or otherwise to avoid injury
- ✓ Take appropriate measures to ensure maintenance operations on work equipment can be carried out safely while the equipment is shut down, without exposing people undertaking maintenance operations to risks to their health and safety

2.1.1. Maintenance of equipment

Regular maintenance of equipment is an important and necessary activity. The term ‘maintenance’ covers many activities, including inspection, testing, measurement, replacement and adjustment, and is carried out in all sectors and workplaces. It has a vital role to play in reducing the risk associated with some workplace hazards and providing safer and healthier working conditions. Insufficient/inadequate maintenance can cause serious (and potentially deadly) accidents or health problems.

There are two types of maintenance: routine maintenance is planned and focuses on preventing future problems, while corrective maintenance is reactive and happens when equipment goes wrong and needs to be fixed.

2.1.2. Identifying and marking unsafe or faulty tools

In practice, this involves daily visual inspections aimed at detecting signs of possible fault; for example, oil or coolant leaks. This also includes the mechanical adjusting and tune-up of equipment and the detection and correction of small problems before they become major problems. Items requiring attention should be reported.

2.1.3. Removing unsafe tools from use and immediately notifying supervisor.

- Some basic rules to prevent hazards associated with the use of hand & power tools are-
  - ✓ Examine each tool for damage before use.
  - ✓ All portable tools that damaged should be removed from use and tagged “Do Not Use”.
  - ✓ Keep tools sharp and clean
  - ✓ Follow the instructions in the user’s manual for lubricating and changing accessories follow.
  - ✓ Maintain tools according to the manufacturer’s specifications to avoid worsening vibration

2.2. Using personal protective to handling risk

PPE is equipment worn by a worker to minimize exposure to specific hazards. Examples of PPE include respirators, gloves, aprons, fall protection, and full body suits, as well as head, eye and foot protection. Using PPE is only one element in a complete hazard control program that would use a variety of strategies to maintain a safe and healthy environment. PPE does not reduce the hazard itself nor does it guarantee permanent or total protection.

The food service industry is responsible for making, transporting, or selling meals, drinks, and other food products for restaurants, school cafeterias, work canteens, hotels, bars, and many other institutions around the country. The Occupational Safety and Health Administration (OSHA) recommends using personal protective equipment (PPE) to enhance the safety of the food, workers, and customers.



Figure 2.1: Clean and safe at work in the food processing industry

2.2.1. Planning a protection strategy

Before any decision is made to begin or to expand a PPE program, it is important to understand the underlying principles of protection strategies.

- The main elements that must be considered are:

  - ✓ Protection of workers
  - ✓ Compliance with applicable laws / regulations / standards / guidelines
  - ✓ Compliance with internal company requirements
  - ✓ Technical feasibility

A good comprehensive strategy considers the hazards, conducts a risk assessment, evaluates all possible control methods, integrates various approaches, and reexamines the controls frequently to make sure that the hazard continues to be controlled.

2.2.2. The Role of PPE in food safety

The Occupational Safety and Health Administration (OSHA) recommends using personal protective equipment (PPE) to enhance the safety of the food, workers, and customers.

I. Protecting the Food

Using appropriate PPE during food preparation and handling helps minimize the risk of cross contamination and unnecessary food spoilage. By providing their employees with high-quality PPE, food companies are less likely to experience contamination in their products through parasites, bacteria, dust, mold, and other human-related debris. Common PPE worn to protect food includes gloves, safety glasses, masks, face shields, and hairnets.

II. Protecting the workers

Employees in the food service industry are at risk of exposure to harmful chemicals and toxic materials. Ammonia from cooling systems, disinfectants and other chemicals found throughout food manufacturing plants pose health risks to anyone who comes in contact with them. Workers at risk of contamination should wear protective clothing, such as gloves, safety glasses, face shields, masks, or overalls. Restaurants and kitchens also contain potential hazards for workers. Employees can easily sustain an injury from sharp knives or hot dishes if they don't have the right PPE. Gloves, oven mitts, aprons, anti-slip footwear, slip-resistant floor mats, and wet floor signs are all examples of PPE found in restaurants, cafes, and bars.

i. Protecting the customers

If a restaurant or food service provider is found to be negligent regarding the safe preparation and provision of food to their customers, they can face penalties that may ultimately result in the closure of the premises. Business owners or managers must provide staff with adequate PPE to prevent contamination and the spread of foodborne illnesses.

2.2.3. Types of PPE Used in the Food Service Industry

The type of PPE recommended for use in the food service industry depends on the nature of the business, the work environment, and the employees. To determine what PPE is necessary, an employer must survey the workplace and conduct a safety audit. The surveyors should look for potential hazards like obstructions, exposed wiring, or emergency exit access during the audit. Employees must be trained to use their assigned personal protective equipment correctly to ensure safety. PPE must be fitted to the wearer, or it could become a safety hazard. For example, a protective apron that's too large may tear or snag on equipment, compromising the safety of the food and workers. It's beneficial to carry out periodic audits to guarantee safety standards are maintained and that PPE is adequately stocked onsite.

2.2.4. Selecting the Right Food Industry PPE

Knowing that proper PPE use can and does impact the customer, employee, and product itself, food industry companies must feel confident in their purchasing decisions regarding PPE since it's going to make such a significant effect.

- Selection and use of PPE requires careful consideration, as there are many different types that reduce the risk of injury of contact or exposure to a hazard. Incorrect use of PPE, or purchasing inappropriate PPE, can contribute to serious workplace incidents.

2.2.5. The Requirement for PPE

To ensure the greatest possible protection for employees in the workplace, the cooperative efforts of both employers and employees will help in establishing and maintaining a safe and healthful work environment.

- In general, employers are responsible for
  - ✓ Performing a "hazard assessment" of the workplace to identify and control physical and health hazards.
  - ✓ Identifying and providing appropriate PPE for employees.
  - ✓ Training employees in the use and care of the PPE.

- ✓ Maintaining PPE, including replacing worn or damaged PPE.
- ✓ Periodically reviewing, updating and evaluating the effectiveness of the PPE program.

- In general, employees should:
  - ✓ Properly wear PPE,
  - ✓ Attend training sessions on PPE, Using personal protective equipment's
  - ✓ Care for, clean and maintain PPE, and
  - ✓ Inform a supervisor of the need to repair or replace PPE

PPE that is uncomfortable, restrictive or heavy may create secondary hazards, and, as result, constant supervision may be necessary to ensure it is used effectively.

- Some of most popular PPE includes:-
  - ✓ Muff,
  - ✓ Ear protection,
  - ✓ Eye and face protection,
  - ✓ Glove
  - ✓ Eye goggle
  - ✓ Safety shoes
  - ✓ Apron
  - ✓ Protective wear.
  - ✓ Hair net
- Using and distributing PPE to your employers:
  - ✓ Instruct and train people how to use it;
  - ✓ Tell them why it is needed, when to use it and what its limitations are;
  - ✓ Never allow exemptions for those jobs that 'only take a few minutes';
  - ✓ If something changes on the job, check the PPE is still appropriate – speak with your supplier, explaining the job to them;
  - ✓ If in doubt, seek further advice from a specialist adviser.

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: Write True or False

1. Corrective maintenance is planned and focuses on preventing future problems. (1point)
2. Routine maintenance is reactive and happens when equipment goes wrong and needs to be fixed. (1point)
3. Regular maintenance of equipment is an important and necessary activity. (1point)

Test II: Fill in the black space

1. _____ is equipment worn by a worker to minimize exposure to specific hazards.
2. Performing a _____ of the workplace to identify and control physical and health hazards.

Test III: Short Answer Questions

1. What are two types of maintenance?
2. Write the basic rules to prevent hazards using hand & power tools.
3. What is work equipment?
4. What does mean PPE?
5. What do the Regulations require?
6. Write at least seven the most popular PPE
7. When you plan protection strategy, what you consider?

Operation Sheet 2

2.1. Manual Material Handling

A. **Tools and equipment'** needed to Safety in Manual Material Handling adjust cream separator 7 kg object that may be packed food product.

- ✓ Personal Protective Equipment (PPE) such as overall, Boats, Gown, helmets and Hand glove.

B. Procedures of Manual Material Handling

i. Position the feet
ii. Straight back and bend knees
iii. Load close the body
iv. Correct Grasp
v. Tuck your Chin In
vi. Keep body weight directly over feet and lift with legs

LAP Test 2

Name……..ID……Date……..

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following task within **30** minutes. The project is expected from each student to do it.

Task 1: Perform manual material handling

LG #3	LO #3 Plan and Conduct Manual Handling

Instruction Sheet

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

- Using movement and posture to minimize injury
- Identifying sources of risk based on historical data
- Modifying workplace layout and environment
- Modifying task to minimize risk
- Using manual handling aids based on workplace instructions

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:

- Use movement and posture to minimize injury
- Identify sources of risk based on historical data
- Modify workplace layout and environment
- Modify task to minimize risk
- Use manual handling aids based on workplace instructions

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 3

3.1. Identifying sources of risk based on historical data

To eliminate or reduce risks, you need to find the sources of risk for each of the risk factors assessed and alter these sources of risk. In finding the sources of risk, it may be helpful to refer to any sketches, photographs or comments about the task that you added to the risk assessment worksheet.

Ask yourself, your employees and health and safety representatives questions such as:

- ✓ What is causing employees to use awkward postures or movements? (for example, the layout of the workplace, a workstation that cannot be adjusted, the position and type of objects being handled, poor housekeeping or bad lighting)
- ✓ Why does such high force need to be used? (for example, the heavy weight of the object being handled, or a tool with grips that are too large for most hands)
- ✓ Why do employees have to do the task so often, or for so long? (for example, the work pace is too fast due to tight deadlines, or staff numbers are limited)
- ✓ What is causing exposure to heat, cold or vibration? (for example, a task is done too close to a furnace while wearing protective clothing, or using a poorly maintained tool or plant with inadequate vibration damping mechanisms) The following sections explain more about sources of risk and how to alter them to eliminate or reduce the risk of MSD.

3.1.1. Effects of manual handling

Manual handling can result in fatigue, and lead to injuries of the back, neck, shoulders, arms or other body parts. Two groups of injuries may result from manual handling:

- ❖ Cuts, bruises, fractures etc., due to sudden, unexpected events such as accidents
- ❖ Damage to the musculoskeletal system of the body (muscles, tendons, ligaments, bones, joints, bursa, blood vessels and nerves) because of gradual and cumulative wear and tear through repetitive manual handling. These injuries are called ‘musculoskeletal disorders’ (MSDs) and can be divided into 3 groups:
  - ➢ Neck and upper limb disorders
  - ➢ Lower limb disorders

- Back pain and back injuries.

Work-related low back pain and low back injuries are the most common kind of musculoskeletal disorders caused by manual handling. Work-related musculoskeletal disorders due to manual handling (e.g. low back disorders) may have serious consequences to workers, and may restrict their ability to undertake a wide range of work and leisure activities for the remainder of their lives.

Therefore, prevention is vital.

3.1.2. Sources of the risks

Sources of risk can be organized into categories such as customer risk, technical (product) risk, and delivery risk. Within each category, specific sources of risk can be identified and risk reduction techniques applied.

- **Customer Risk**

Customer risk is related to the customer's key success factors for the project. A project is not successful if the customer is not successful with the system. The key success factors are found in both the customer's requirements and the context or environment within which the system and its users will function. These will vary from customer to customer, even for similar systems.

- **Technical Risk**

Technical risk arises from the capability of the technical solution to support the requirements of the customer. Until the system is actually constructed and tested every component of the architecture is a potential source of risk.

- **Delivery Risk**

Delivery risk is related to the ability of the complete team (including vendors and subcontractors) to deliver against the plan at the cost and schedules estimated.

3.2. Modifying workplace layout and environment

3.2.1. Workplace layout

The physical features of the workplace can affect the way your employees work, and can increase the risk of MSD. Altering the workplace – including workplace layout, workstation design and the working position of employees – can eliminate or greatly reduce the risk. Altering the workplace layout means changing the height and placement of plant, equipment, furniture and objects used in the task, so as to eliminate or reduce the risk of MSD. Look at the layout of your workplace. What changes can be made to improve any postures, movements and forces that you identified in your risk assessment?

- **To eliminate or reduce bending movements and postures:**
  - ✓ Change the work height by installing lift tables, self-adjusting work dispensers or similar mechanical aids
  - ✓ Make sure there's enough space for the task to be done in an upright posture with objects close to the body
  - ✓ Provide adjustable work levels
  - ✓ Lower the position of the employee, while leaving the work level unchanged
  - ✓ Keep the objects and materials used in the task at work level – don't lower objects that will need to be lifted later
  - ✓ Align the object being worked on with normal wrist posture
  - ✓ Design handles on objects, tools and controls to allow normal wrist postures
- To **eliminate or reduce twisting movements and postures:**
  - ✓ position all frequently used controls, equipment, materials and tools in front of the employee
  - ✓ provide sufficient work space for the employee's whole body to move and turn
  - ✓ allow clearance for the employee's legs and feet
  - ✓ provide adjustable swivel chairs for seated tasks
  - ✓ make sure there's enough room for the employee and any protective clothing, tools, objects and mechanical aids that he or she needs for the job
- To eliminate or reduce reaching movements and postures:
  - ✓ Place the objects used in the task closer to the person
  - ✓ Lower any items that are higher than the appropriate work level

- ✓ Store items below shoulder height
- ✓ Raise the employee closer to any objects that are out of comfortable reach
- ✓ Allow enough room for the employee to walk around the load or object
- ✓ Remove any barriers which prevent the object being handled close to the body to eliminate or reduce pushing, pulling, holding and carrying movements and forces:
- ✓ Relocate stores or stockpiles closer to where the items are required
- ✓ Locate the parts of the process closer together
- ✓ Use powered conveyors, slides, chutes or rollers to move objects
- ✓ Keep the work area free of obstacles
- ✓ Provide clear, direct pathways for trolleys and other mobile equipment, to minimize turning and sudden stops
- ✓ Make sure that objects don't need to be pushed, pulled or carried up steps or ramps
- ✓ Ensure that floor surfaces are clean and smooth

3.2.2. Workplace environment

A work environment is the setting, social features and physical conditions in which you perform your job. These elements can impact feelings of wellbeing, workplace relationships, collaboration, and efficiency and employee health. Here are the significant aspects of a work environment:

- **Physical environment:** This element is made up of the size, layout and location of a workplace, whether work is conducted indoors or outdoors, the facilities offered in a workplace and the furnishings used while working.
- **Company culture:** This element refers to the way a company and its employees operate, including what effective communication looks like between different levels of staff, employees' perspective of company leaders, the company's goals and what the organization values.
- **Working conditions:** This element includes the formal terms under which staff members are hired, such as the rate of pay, contract of employment and length of the workday. It can also cover recreational activities and other initiatives to promote a healthy workplace.

2.3. Elements of a work environment

Use the following descriptions of each work environment element to identify a positive and productive workplace:

2.3.1. Physical environment

The physical conditions you work under will play a crucial role in enabling you to reach your full potential. Some critical aspects of your physical environment to consider include:

- **Size:** The size of your working area can have an impact on whether you have everything at hand to accomplish your job, while at the same time significantly influencing how you feel at work. To evaluate the size of your workspace, consider the amount of space you have to move freely, whether you have all the equipment you need nearby and if the area is large enough to accommodate all staff members.

- **Layout:** Some indoor workplaces have an open floor plan, while others use cubicles or other dividers to separate spaces. The design of a workplace may depend on the type of work. For example, a more collaborative environment may benefit from an open layout, while a job that requires discretion would better operate with separate offices or cubicles to ensure privacy.

- **Furnishings:** Desks, chairs, conference tables and other workplace furniture can also impact employees on the job. Access to comfortable and adequate seating, clean workspaces and functional desks can ensure indoor workplaces remain efficient. Outdoor workplaces may include comfortable furniture for break times.

- **Equipment:** Some roles require special equipment to do their job, and depending on the company, the employer may or may not provide it. Some roles, such as a mechanic, may be required to bring their own set of tools. Indoor office spaces are more likely to provide the necessary equipment, such as computers, printers and other essential technology used on the job.

- **Facilities:** Other facilities can influence how you feel physically and mentally during your working life. Being able to take a break or go to the bathroom are essential parts of any productive daily routine, so the location of these facilities can also impact the work environment. Additional facilities such as relaxing spaces and on-site gyms can also have a positive influence on employees.

- **Location:** Some roles predominantly work inside, some spend most of their working day outside and certain roles may have a mixture of both indoor and outdoor work. Many employers may provide additional facilities or equipment to ensure employees are comfortable while working and productivity is maintained.

3.2.3. Company culture

✓ Your company's beliefs and how their goals align with yours can be a substantial factor in your comfortability in the workplace. Here are the significant elements of company culture:

- **Code of conduct:** Some companies may explain their business culture in a formal code of conduct or provide guidelines for employees. These documents can have you following certain conditions when performing tasks as well as when interacting with coworkers, workplace leaders and external stakeholders. These guidelines are often found in an employee handbook.

- **Encouragement and development:** Some employers directly promote collaboration and teamwork, emphasize positive feedback and consistently celebrate employees who succeed. Other employers may provide more constructive feedback to encourage employees to improve.

- **Company mission statement:** This statement is a set of values the company seeks to advance through its work. While these values may not be discussed daily, they guide every task you do and each goal you set as a contributor in the organization

2.4. Identify a suitable work environment

- During your job search, consider evaluating prospective employers to find a comfortable work environment that promotes your productivity, efficiency and success. Use the following tips to discover ways to identify work environment elements:

1. **Read the job description carefully:** The description may give you a sense of the physical environment you'll be working in, such as the common daily tasks and type of physical setting. Review the employer's expectations for the role to find elements of company culture.

2. **Research the company online:** Many companies have a website, so use this resource to learn more about their values or goals discover if they have recreational facilities or read about their latest team-building activity. You can also find their social media pages and see how they interact with customers or other external parties.

3. **Ask questions at the interview:** After doing your research ahead of time, you can also prepare several questions focusing on the work environment, such as which equipment you'll be using, whether they have healthy eating options nearby and how they prefer to resolve conflicts on teams.

4. **Visit your workplace:** After some interviews, the company may invite you to tour its facilities and see what it's like to work there. You can visit the physical environment where you could be working.

5. **Ask contacts who work at the company:** If you know any current or past employees, contact them to ask what it's like to work there. You may gain more insight into employer-employee relations and the company culture.

6. **Read online reviews:** Many career or job search websites offer you the chance to read about other employees' experiences. Read positive and negative reviews to understand the pros and cons that a job or company may offer. View these responses in terms of how these elements may affect you if you worked there.

7. **Read through your employment contract and introductory documents:** Once you receive a job offer, you are likely to review onboarding documents that discuss the specific conditions that make up your work environment. For example, contracts typically include your hours of work, requirements of the job and rate of pay. You may also review the employee handbook to understand company policies and procedures.

8. **Ask questions if you have any outstanding concerns:** If you feel you need more information about the work environment after receiving an offer, ask the human resources representative or the hiring manager to learn about their experience with the company.

3.3. Modifying work tasks to minimize the risk of injury

3.3.1. Prevention measures

The negative health effects of manual handling can be prevented by trying to eliminate or at least reduce the risk factors involved. The following hierarchy of prevention measures must be used

i. Elimination

First, can the work be designed and organized in such a way that manual handling can be avoided completely, or at least restricted (e.g. using powered or mechanical handling equipment such as conveyor belts, lift trucks, electric hoists or gravity-inclined roller track)?

ii. Technical measures

If manual handling cannot be avoided, automation, mechanization and the use of lifting and transport equipment should be considered (e.g. conveyors, hoists, cranes, vacuum lifting devices, lift tables, pallet trucks, lift trucks, barrows, trolleys). However, attention should be paid to ensure that new work risks are not created (e.g. through noise, or hand-arm vibration).

iii. Organizational measures

Organizational or administrative measures should only be considered if elimination of manual handling is not possible, and if technical measures are not effective in reducing the risks involved in manual handling. Several people should carry out heavy or frequent manual handling tasks or, if possible, the amount that is handled should be reduced or the load split into smaller ones. A machine, supervisor or colleagues should not set the rate of manual handling. The time taken to carry out manual handling tasks should be extended by taking breaks, or by alternating them with other tasks so that the muscles have time to recover.

iv. Provide information and training to workers

If workers have to carry out manual handling activities, they should be informed of the risks of accidents and ill health, particularly concerning their specific tasks. They should also receive training on the use of equipment and on correct handling, techniques (see below).

v. Correct handling techniques

a) Lifting

Before lifting the load, you should plan and prepare for the task. Make sure that:

- ✓ You know where you are going
- ✓ The area around the load is clear of obstacles

- ✓ Doors are open and there is nothing on the floor that could trip someone or make them slip
- ✓ You have a good grip on the load
- ✓ Your hands, the load and any handles are not slippery
- ✓ If you are lifting with someone else, both of you know what you are doing before you start



Figure 3.1: Lifting

- ✓ You should adopt the following technique when lifting the load:
- ✓ Put your feet around the load and your body over it (if this is not feasible, try to keep your
- ✓ body as close possible to the load and in front of it) Use the muscles of your legs when lifting
- ✓ Keep your back straight
- ✓ Pull the load as close as possible to your body
- ✓ Lift and carry the load with straight arms.

b) Pushing and pulling

Pushing and pulling handling devices such as trolleys and barrows is particularly strenuous for the back, shoulders and arms.

It is important that:

- ✓ Pushing and pulling is done using the body's own weight: when pushing you should lean forward, when pulling you should lean backward
- ✓ You have enough grip on the floor in order to lean forward/backward
- ✓ You avoid twisting, turning and bending the back
- ✓ Handling devices have handles/hand grips that you can use to exert force. Handle height
- ✓ should be between the shoulder and waist so that you can push/pull in a good, neutral posture
- ✓ Handling devices are well maintained so that the wheels run smoothly Floors are hard, even and free from rubbish (good housekeeping).

3.4. Use manual handling aids based on workplace instructions

Frequent and heavy lifting and handling can cause back injuries. However, using lifting and handling aids can remove or reduce that risk and keep workers healthy and at work. Since there are heavy and awkward to handle, they require special care and equipment in handling and securing so that they do not fall or tip over causing an injury.

Most accidents or injuries involving heavy equipment and tools happen when moving or handling them. There are health and safety benefits for employers if they control manual handling risks by the use of lifting and handling aids such as:

- ✓ Improved/maintained productivity;
- ✓ Reduction in retraining costs;
- ✓ Limiting the options for liability;
- ✓ Reduction of injury/ill health to employees.

3.4.1. Factors to consider when selecting lifting and handling aids

- ✓ Involve employees and safety representatives during assessment and when considering
- ✓ Possible solutions so that you can be sure what you propose will Work in practice and will not introduce any new hazards.

- ✓ Seek advice from suppliers on the suitability of new lifting and handling aid Equipment for your business. Check equipment is CE-marked and within the safe working load.
- ✓ Consider what maintenance will be required.
- ✓ Consider whether the equipment will suit the area, it will be used in, e.g. is there enough room to man oeuvre or enough headroom.
- ✓ Check that the equipment is suitable for the floor area in terms of stability and ground surface.
- ✓ Consider other factors associated with introducing lifting and handling aids, e.g. site safety, training, information and support.

3.4.2. Use of mechanical aids

Mechanical aids can be an effective method of reducing manual handling.

- ✓ Ensure the aids you select are appropriate for the task, and that employees are trained in their use. You should consider any manual handling hazards that still might be associated with the task, and any new ones that might be introduced by the use of the aid.
- ✓ Ensure that there is sufficient room for the equipment and workspace, and that the equipment is appropriately maintained. Consult employees if equipment is being considered as a control option, to trial equipment formally prior to purchase.

3.4.3. Preventing slips, trips and falls

Serious back injuries may result from slips, trips and falls associated with manual handling. Loss of balance is increasingly likely as the weight and height of the load being carried increase. There is a greater risk of slipping on slippery surfaces if a load is being carried. Tripping is also more likely where a load obscures the vision or affects the balance of the carrier. Some ideas on contributory factors and controls are summarized below

Factor	**Possible controls**
LOAD	
Blocks visibility	Avoid carrying high or wide loads that may obscure forward, lateral or underfoot vision. Use equipment. Alter the load by splitting, redesigning or providing handles.

	Provide assistance.
ENVIRONMENT	
Floor surface Lighting	Ensure it is a suitable (e.g. On-slip) material. Ensure the task does not involve movement between floor surfaces with widely different frictional properties. Remove obstacles and trip hazards such as wiring and stored materials. Pay particular attention to tasks performed in food preparation or processing areas and outside. Ice, water, snow, mud, liquid contamination, obstacles and holes all increase the risk of slipping or tripping, particularly when carrying or handling. Ensure good lighting is provided for all tasks.
PEOPLE	
Characteristics Training and education	Ensure the task design has considered the skills, experience, strength and other characteristics of the employees. Train, educate and inform people in the tasks they are performing and the associated slip, trip and fall hazards, including how to reduce those hazards. Ensure employees know how to prevent falls and injuries from falls.
TASK	
Ascending and descending stairs or a ladder (whilst carrying or handling) Footwear Uncontrolled or fast pace	Eliminate carrying loads on steps/ladders, or reduce the weight and size of the load and improve the ability to grasp. Provide handling equipment (e.g. pulley system). Simplify the task, reduce number of actions. Provide appropriate footwear with adequate grip for the underfoot conditions where the task takes place, and ensure the footwear provided is used. Ensure task design considers people's capabilities. Allow operator control or slow the pace.
MANAGEMENT	
Production bonus/incentive to	Remove incentives or motivation to rush or take risks. Organize work to ensure slip, trip and fall likelihood is minimized.

rush or take risks	

3.4.4. Consult employees

Consulting employees usually provides valuable insights into tasks that might be hazardous. Employees will have a good knowledge of the manual handling activities they perform and how and when they perform them. Employees will be able to identify specific tasks or actions that they find fatiguing, strenuous or difficult to perform, and they will usually be able to identify suitable controls. Interviewing injured employees and those carrying out similar tasks will show what they think are the hazards.

Good liaison with employee representatives can help with:

- ✓ Selecting employees to help identify manual handling hazards
- ✓ Developing control measures
- ✓ Liaising with other employees to address concerns like confidentiality
- ✓ Devising auditing procedures

3.4.5. Observe manual handling tasks

Observe manual handling tasks to identify the presence of any specific hazards. Not all manual handling is necessarily harmful, so it is important to consider the hazards that may lead to harm from manual handling.

Involve employees, to explain what you are doing and gain their consent if necessary. Observe them in detail and ask them to assist you to carry out the evaluation. There are several ways of collecting information to gain further insights:

- ✓ Watching the task
- ✓ Using checklists
- ✓ Filming the task
- ✓ Participating in the task (where it is safe to do so).

3.4.6. Identify hazardous manual handling

The last step in this part of the hazard control process is to find out if hazardous manual handling is present in the task. The previous investigations will allow you to answer the following series of questions.

Table 1: Hazard identification checklist

Are any of these factors present in the task?	No	Yes
Twisted, stooped, awkward asymmetical postures	☐	☐
Fixed, sustained, rigid, prolonged postures	☐	☐
Unvaried, repetitive movements	☐	☐
Sudden, uncontrolled or jerky movements	☐	☐
Handling or reaching away from the body	☐	☐
Using high or sustained force	☐	☐
Handling heavy or awkward loads	☐	☐
Whole body vibration or upper limb vibration	☐	☐
Handling that goes on for too long without a break	☐	☐

If any of these elements are present in a manual handling task i.e. if there is a tick in any one of the boxes in the "Yes" column, it will require further assessment.

3.5. Using movement and posture to minimize injury

Manual handling involves any activity that requires the use of force exerted by a person to lift, lower, push, pull, carry, otherwise move, or hold an object. Every department in the College has tasks that involve manual handling, whether it is carrying boxes of printing paper in an office or moving large pieces of equipment in a workshop or laboratory.

The Regulations specify that all manual handling activities should be avoided when practical to do so and implement controls/measures such as the use of mechanical aids when it is impossible to avoid such activities. So, cares that should be considered includes:-

A. Lifting and Lowering

The regulations do not specify safe weights because capability is so variable. Figure 1 provides a guide to the reduction in capability when lifting loads to different heights and distances from the body. It assumes a 25 kg load to be within your capability when a simple straight lift to waist height is involved. No single person should be required to lift, lower or carry loads over 25kg. This limit would only apply when the load is within the individual's capabilities and when no other risk factors are present e.g. bending

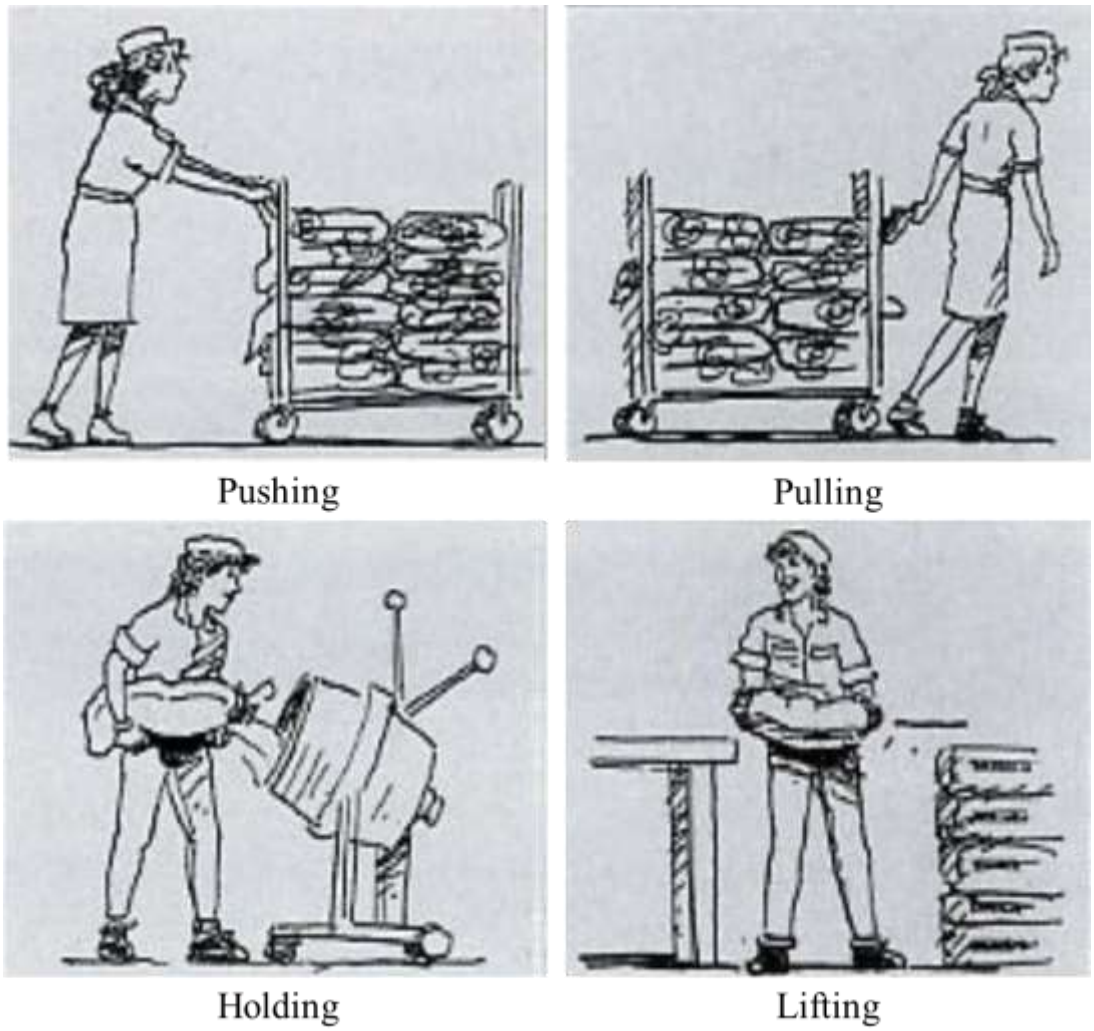


Figure 3.2: Manual handling techniques

B. Reaching

When a load held away from the body, the stress on the lower back increases substantially. The maximum weight you can lift safely is reduced dramatically the further away from the body that the load is handled Long reaches increase the risk of a lower back injury.

C. Principles of safe lifting practices

In order to lift a load safely, you should consider the following guidelines.

- **Plan the lift**

  Unfamiliar loads must be treated with caution. Gently rock the load to test the weight and its distribution. Consider the following points. Where is the load going?

- ✓ Can handling aids be used?
- ✓ Is a team lift required?
- ✓ Is there adequate space for the lifting maneuver?
- ✓ Can the lift be completed without awkward stooping or twisting movements?
- ✓ Remove any obstructions or tripping hazards from the route
- ✓ Plan resting places if the load is to be moved a long distance
- ✓ Consider the use of protective equipment e.g. gloves, boots

Self-Check 3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Choose the best answer

1. To keep regular posture, unfamiliar loads must be treated with caution gently rock the load to test the weight and its distribution Consider the following points (5points)
   A. Where is the load going?
   B. Can handling aids be used?
   C. Is a team lift required?
   D. Is there adequate space for the lifting maneuver?
   E. All
2. _____is one of musculoskeletal disorders' which may be caused due to manual handling task 3 points)
   A. Neck and upper limb disorders
   B. Lower limb disorders
   C. Back pain and back injuries.
   D. All
3. _____of the back should be avoided during manual handling task to minimize injuries.
   B. Twisting
   C. Turning
   D. Bending
   E. All

Test II: Write True or False

1. Poor lighting can make employees adopt awkward postures and movements in order to do their work.
2. Environmental conditions include vibration, heat and cold, and other factors such as lighting and housekeeping.
3. Effective housekeeping can help eliminate workplace hazards.

4. Effective housekeeping is not an ongoing operation.
5. Serious back injuries may result from slips, trips and falls associated with manual handling.
6. Mechanical aids can be an effective method of reducing manual handling.
7. Frequent and heavy lifting and handling can cause back injuries.

Test III: Short Answer Questions

1. What are the possible negative health effects of manual handling?
2. What does mean MSD?
3. What are the sources of risk?
4. Define workplace environment.
5. Write elements significant elements of company culture.
6. Write some critical aspects of your physical environment.
7. What are significant aspects of a work environment?
8. Mention the ways to identify work environment elements?
9. Write the three types of workplace environment.
10. Write the hierarchy of prevention measures?
11. What does mean LLDPE?
12. Write the ways of collecting information.
13. What are the factors to consider when selecting lifting and handling aids?

Reference Materials

Books:

- Wellington, New Zealand. June 2001.Published jointly by the Occupational Safety and Health Service of the Department of Labour and the Accident Compensation Corporation.
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The experts who developed the learning guide

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