



DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH,  
MINISTRY OF HUMAN RESOURCES, MALAYSIA



GUIDELINES ON OCCUPATIONAL SAFETY AND HEALTH  
**IN COURIER SERVICES**  
**INDUSTRY**

**2015**



DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH,  
MINISTRY OF HUMAN RESOURCES, MALAYSIA



## FOREWORD

The **Guidelines on Occupational Safety and Health in Courier Services Industry** provide information and recommendations on the management of Occupational Safety and Health (OSH) in the Courier Services industry in compliance with Occupational Safety and Health Act 1994, Act 514.

Employers are required to read these guidelines in conjunction with the **Occupational Safety and Health Act 1994, Act 514** in order to fulfil the relevant requirements in a comprehensive approach and integrated manner.

Employers and employees must understand the rationale and the importance of managing risks at their workplace. This will minimize or help eliminate occupational illnesses due to hazards associated with courier activities such as road accidents.

These Guidelines aim to promote a safer and healthier workplace for employees and to reduce work-related illnesses and hazards as employees' health is directly linked to organizational productivity. These Guidelines will be reviewed periodically. Thus, comments and suggestions from those in the courier services industry such as Safety and Health officers, Safety and Health Committees of courier companies, occupational health doctors, employers, employees and others concerned, are most welcome. Comments and suggestions can be submitted in writing or via e-mail to the Department of Occupational Safety and Health.

I would like to thank and acknowledge those who have assisted in the development of these Guidelines. I hope this smart partnership will continue in the future to encourage more comprehensive safety culture in the industry.

**Director General**  
**Department of Occupational Safety and Health,**  
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## GLOSSARY

<b>DOSH</b>	Department of Occupational Safety and Health
<b>OSHA</b>	Occupational Safety and Health Act, 1994
<b>FMA</b>	Factory and Machinery Act, 1967
<b>NIOSH</b>	National Institute of Occupational Safety and Health
<b>PPE</b>	Personal Protective Equipment
<b>IATA</b>	International Air Transport Association
<b>HIRARC</b>	Hazard Identification, Risk Assessment and Risk Control
<b>MIROS</b>	Malaysian Institute of Road Safety Research
<b>JPJ</b>	Road Transport Department
<b>SPAD</b>	Land Public Transport Commission
<b>PUSPAKOM</b>	Computerised Vehicle Inspection Malaysia
<b>SOCISO</b>	Social Security Organisation
<b>LPG</b>	Liquefied Petroleum Gas

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## 1.0 INTRODUCTION

### 1.1 Purpose

The Guidelines provide information on the management of Occupational Safety and Health in the Courier Services industry in compliance with the Occupational Safety and Health Act 1994, Act 514. The Occupational Safety and Health Act 1994, Act 514, Section 15 states that “it shall be the duty of every employer and every self-employed person to ensure, so far as practicable, the safety, health and welfare at work of all his employees.”

The objective of these Guidelines is to set recommended standard for good technical practice to be applied by Courier Services industry in reducing work related injury and accident.

### 1.2 Definition of Courier

Courier refers to a person or a company that delivers packages and documents. Courier services differ from ordinary mail services as they promise speedy delivery, ensure security, provide tracking services and offer specialisation and tailor-made services. Hence, courier services may cost more than the standard mail services. The courier services industry is seamless as it can operate within a specific town, city or go beyond regional, national or international borders. Courier services engage different types of transportation vehicles such as bicycles, motorcycles, lorries, trains and aircrafts to deliver all their consignments.

### 1.3 Application & Scope

These Guidelines aim to provide courier companies with information regarding safety and health practices at work. Knowledge on the safety guidelines and control measures will help to reduce or avoid accidents at the workplace. Hazards encountered are different since they are involved with three major activities of courier industry such as:

- (i) Receiving and Sorting
- (ii) Warehousing
- (iii) Delivering

These Guidelines also describe the use of risk analysis in measuring identified hazards and actions that need to be taken. The main objective is to help the management of a courier companies to outline the routine jobs of their employees. Therefore, the representatives from courier companies, with NIOSH, MIROS and DOSH acting as facilitators, were engaged to develop these guidelines. The topics comprise the following chapters:

- (i) Chapter 2 – Legal Requirements
- (ii) Chapter 3 – Risk Classification
- (iii) Chapter 4 – Courier Activities
- (iv) Chapter 5 – Manual Handling
- (v) Chapter 6 – Transportation Management
- (vi) Chapter 7 – Warehousing Practices
- (vii) Chapter 8 – Training
- (viii) Chapter 9 – Personal Protective Equipment (PPE)

## 2.0 LEGAL REQUIREMENT

### 2.1 Occupational Safety and Health Act, 1994 (OSHA)

The Occupational Safety and Health Act (OSHA), 1994 aims to secure the safety, health and welfare of persons at work and protect others in relation to the activities or persons at work. Under the Act, employers, employees and the self-employed are required to meet certain standards on safety, health and welfare. Employers should comply with the safety, health and welfare guidelines for employees as stated below:

- provide or maintain equipment and systems of work that are safe and without risks to health;
- ensure that equipment and substances are used, stored and transported safely and without risks to health;
- provide information, instructions, trainings and supervision to ensure the safety and health of employees;
- maintain the safety of the workplace by ensuring no obstructions to entrances and exits; and
- ensure the safety and health of visitors to the workplace.

Employees must comply with the safety, health and welfare guidelines as follows:

- cooperate with employers to maintain the required level of safety and health; and
- take reasonable care of the safety and health of themselves and others.

People in control of workplace (building owners who are not the employers) are responsible for the safety of the workplace, and must ensure all entrances and exits do not pose any safety and health risks. Section 18(1) of the Act requires that an occupant of a non-domestic premise other than employees, may use the plant or substance provided for their use, and shall take practicable measures to ensure that all means of access there to and egress are safe and without risks to health.

#### 2.1.1 Safety Policy

Section 16, OSHA 1994 describes the responsibilities in formulating the safety and health policy within the organisation. All organisations must have a written safety and health policy. Having such a policy demonstrates the commitment of an organisation towards the safety and health of its employees at the workplace. The policy should be made available and displayed at strategic locations in the workplace to ensure that all employees are aware of the policy. In addition, the policy should be updated regularly, and employees should be notified of any changes. Appendix A shows an example of a safety policy. The policy should state the types of hazards and an assessment of risks in the workplace. The results of the risk assessments should be incorporated into the safety and health policy where appropriate. It is advisable to review the most common causes of workplace accidents while preparing the policy.

#### 2.1.2 Safety Committee

Section 30, OSHA 1994 makes it compulsory for employers who have 40 or more employees to establish a safety and health committee at their workplace or as directed by the Director General of DOSH. The functions of the Safety and Health Committee at the workplace are to:

- assist in the development of safety and health rules and regulations, and a safe work system;
- review the effectiveness of the workplace safety and health programmes;
- carry out studies to identify the trend of accidents, near-miss accidents, dangerous situations, substance poisoning or work-related diseases that occur at the workplace, and to report to the employer of any unsafe or unhealthy conditions or practices together with the recommendations for corrective actions; and
- review the safety and health policy at the workplace and make recommendations to the employer for any revision of such policies.

The committee shall inspect the workplace at least once in every three months and discuss the findings as soon as possible. Recommendations for corrective actions in the presence of risks which may harm the safety and health of employees should be made known to the employer.

A safety and health committee consists of the following:

- **Chairman** (should be from the top management)
- **Secretary** (should be the safety and health officer of the organisation. In the event that the organisation is without a safety and health officer, the chairman may appoint any person from the committee to act as the secretary, or a secretary may be appointed among themselves by means of ballot)
- **Representatives of employers**
- **Representatives of employees**

For companies with 100 or fewer employees, there shall not be fewer than two representatives for each employees and employers representative, while companies with more than 100 employees shall have not fewer than four representatives each from the employees and the management, respectively. It is imperative that all departments, divisions or sections should be represented to address issues and also receive adequate training to acquire basic knowledge and interest in matters relating to safety and health.

Employers should hold regular safety committee meetings, at least once in three months, to ensure safety and health programmes are implemented effectively at their workplaces. The following points can be taken into consideration to ensure the effectiveness of committee meetings:

- only matters related to safety and health at the workplace shall be discussed;
- all relevant information on OSH must be made available to members;
- minutes must be efficiently recorded and distributed within two weeks after the meeting;
- speedy decisions and follow-up actions must be made based on recommendations from members;
- and
- employer shall provide proper meeting facilities for committee.

The employers shall ensure that members of the safety and health committee are able to perform their roles effectively, and to do so, they need to have a basic understanding and knowledge of their roles and functions.

It is important to note that the OSHA 1994 imposes a penalty involving a fine of not exceeding RM 5,000.00 or six months imprisonment or both for failure to establish a safety and health committee at the workplace.

### 2.1.3 Accident Reporting

#### (a) Department of Occupational Safety and Health (DOSH) Reporting Requirement

The Occupational Safety and Health Act of 1994 (Act 514) requires an employer to notify the nearest Department of Occupational Safety and Health office of any accident, dangerous occurrence, occupational poisoning and occupational disease that occur in the place of work. Generally, three forms are used for reporting and record keeping purposes:

- i. **Form JKKP 6**  
Form for Notification of Accident and Dangerous Occurrence
- ii. **Form JKKP 7**  
Form for Notification of Occupational Poisoning and Occupational Disease
- iii. **Form JKKP 8**  
It serves as the Register of Occupational Accidents, Dangerous Occurrence, Occupational Poisoning and Occupational Disease, on which the occurrences and extent of cases are recorded during the year; and the records are summarised at the end of the year to satisfy employers' obligations to submit the register.

#### Notification of Accidents and Dangerous Occurrences

The employer must notify DOSH by the quickest means (e.g. telephone or fax) and send a report within seven days using an approved form (JKKP 6) when:

- i. any accident occurs out of or in connection with work which causes death; or
- ii. any accident occurs out of or in connection with work which causes serious bodily injury (*as per listed in First Schedule, NADOPOD Regulation*) which prevents the person from carrying out his normal work

- routine for more than four (4) calendar days;
- iii. a dangerous occurrence (*as per listed in Second Schedule, NADOPOD Regulation*) takes place.

When an employee dies within one (1) year succumbing to injury due to an accident arising out or in connection with work, the employer shall inform the Director General in writing, and state whether or not the accident had been reported earlier.

### Reporting of Cases of Occupational Poisoning and Occupational Disease

An employer shall send a report using an approved form (**JKKP 7**) to DOSH within 7 days where a person at work suffers from one of the occupational poisoning or occupational diseases (*as per listed in Third Schedule, NADOPOD Regulation*).

### Maintenance of Records

Every employer shall maintain records of all accidents, dangerous occurrences, occupational diseases and occupational poisoning that have occurred related to work under his control in a register using an approved form (**JKKP 8**). The record is to be kept at the place of work or business for 5 years. The extract from the registry for a period of 12 months shall be sent to Director General before 31 January of each year.

### (b) Social Security Organisation (SOCSO) Reporting Requirement

An employer shall report to SOCSO by completing the accident report form (**Form 21**) and submitting it together with a claim form (**Form 10**), work attendance record, medical leave certificates and a copy of the employee's national register identity card. In the case of commuting accident (if the accident happens while travelling to or from the work place), a police report and sketch map showing the journey taken are also required. As for the occupational diseases, **form PKS (P) 68** (if the employee is still working) or **form PKS (P) 69** (if the employee is no longer working) should be submitted together with the claim form (**Form 10**), **Form 13** or original sick leave certificate. The complete list of occupational diseases covered by SOCSO is as stated in the Fifth Schedule of the Employees' Social Security Act, 1969.

## 2.2 Traffic Rules

### 2.2.1 Road Transport Act 1987

**Road Transport Act 1987 covers the classification, registration and licensing of vehicles and drivers' road offences.**

This act prohibits the usage of vehicles which fail to comply with the rules related to construction, weight, equipment, age applicability and use. A vehicle should be registered and have a valid road tax before it can be used. The road tax and registered vehicle number should be fixed and exhibited on the vehicle. The driver should only drive a vehicle if he is the holder of a valid driving licence authorised for a specific vehicle class. A vocational license is required for a driver to drive a specific vehicle. It is the employer's responsibility to ensure that the driver employed is only permitted to drive the vehicle which he is licensed for. Some of the offences specified under this act include the following but not limited to:

- exceeding imposed speed limit;
- causing death by reckless or dangerous driving;
- reckless and dangerous driving;
- careless and inconsiderate driving which includes inattentive driving;
- driving under the influence of alcohol or drugs;
- driving when he is aware of his disease or disability;
- obstructing the road with the vehicle which includes parking in prohibited area;
- driving the vehicle without the registered owner's consent; and
- not stopping when being involved in an accident.

Part IIA of Road Transport Act 1987 requires some class or category of vehicle (including good vehicles) to undergo periodic inspections to ensure that the vehicle is in compliance with the construction, equipment

and use requirement. The requirement is specified in Motor Vehicles (Periodic Inspection, Equipment and Inspection Standard) Rules 1995.

Newly manufactured vehicles should be inspected once annually for the first 2 years and thereafter once in every 6 months. The inspection should be carried out by authorised inspection centres. As for today, PUSPAKOM is the only authorised inspection centre until 2024.

The Inspection certificate issued shall be fixed and exhibited on the vehicle as prescribed by the Act.

### **2.2.2 Act related to commercial vehicle**

Effective from 2010, Commercial Licensing Board Act 1987 is only applicable in Sabah, Sarawak and Federal Territory of Labuan, while Peninsular Malaysia is governed by Land Public Transport Act 2010.

Land Public Transport Act 2010 requires the operator or good vehicle services provider to hold an operator's licence in order to provide their services. Applications can be made to the Land Public Transport Commission (SPAD) with prescribed fees. An operator's licence issued is only entitled for one class of good vehicle operation. However, an operator may hold more than one operator licence. An operator's licence is valid for the determined period; that is not more than seven years.

The operator should renew its operator's licence at least 90 days before the expiry date. If there is no renewal application submitted, the operator's licence should be returned to SPAD within 14 days from the expiry date.

The licensed operator is obligated to keep the account and records which should be submitted to the SPAD within three months after the end of each financial year. Records would include:

- compliance to the performance and regulatory standards;
- audited annual balance, profit and loss account;
- accident records involving relevant vehicle; and
- offences committed by operators and their employees

The licensee and licence operators are required to inform SPAD immediately on:

- any proceedings or claims made which might affect their financial condition or ability to perform;
- any reprimands or fines imposed by any Government Entity;
- any change in the control of the licensee or licensed operator; and
- any industrial dispute between the licensee or licensed operator and his employees.

The act also prohibits the licensee, licence operators or their employees to make any alterations to the structure or fixed equipment of relevant vehicles unless approved by the Director General of Road Transport Department. It is unlawful to bring offensive goods. The licensee or licensed operator may refuse to carry any goods which are suspected to be dangerous and may require the goods to be opened. The employee may also stop the transit of the suspected goods unless there is satisfaction expressed with the nature of the goods.

### **2.2.3 The Local Authorities (PBT)**

Courier companies are required to comply with the requirement and regulations laid down by the local authority.

## **2.3 Environmental Requirements**

The Environmental Quality Act 1974 states that all the requirements as stated in Malaysian Act 127 must be complied, especially for smoke from vehicles, scheduled waste disposal from the vehicle workshop, waste water treatment from the plant and office buildings.

## 2.4 Others

Courier Companies should comply with the following act and regulations in relation to occupational Safety and Health issues:

- a. Street, Drainage and Building Act, 1974 (Act 133)
- b. Pesticide Act, 1974 (Act 149)
- c. Energy Commission Act, 2001 (Act 610)
- d. Fire Services Act, 1988 (Act 341)
- e. Atomic Energy Licensing Act, 1984
- f. International Air Transport Association (IATA)
- g. Building, structure of premises and workplace should comply with Pesticide Act



### 3.0 RISK CLASSIFICATION

#### 3.1 Risk Definition

A risk is something that we as individuals live with on a day-to-day basis. People are constantly making decisions based on risks. A risk is the combination of the likelihood and severity of a specified hazardous event occurring. In mathematical terms, a risk can be calculated by the equation:

$$\text{Risk} = \text{Likelihood} \times \text{Severity}$$

Where,

**Likelihood** is an event likely to occur within the specific period or in specific circumstances

**Severity** is an outcome from an event such as severity of injury or health of people, or damage to property, or damage to environment, or any combination of the elements caused by the event.

#### 3.2 Analysis and Estimations of Risk

The likelihood and severity of the credible accident/event sequences can be analysed in order to determine the magnitude and identify the hazards of the event. It can be done by qualitative, quantitative or semi quantitative methods.

##### 3.2.1 Likelihood of an occurrence



This value is based on the likelihood of an event to occur. You may ask the question “How many times has this event happened in the past?” Assessing likelihood is based on worker experience, analysis or measurement. Likelihood levels range from “most likely” to “inconceivable”. For example, a small spill of bleach from a container when filling a spray bottle is most likely to occur during every shift. Alternatively, a leak of diesel fuel from a secure holding tank may be less probable. **Table 1** indicates a likelihood using the following values:-

##### The Determination of Likelihood

Several factors that can be considered to determine the likelihood are:

- Frequency of accident occurrences
- Frequency of activity
- Unsafe condition/way of working
- Existing control level

**Table 1: Likelihood of an occurrence**

LIKELIHOOD (L)	DESCRIPTION	RATING
Most Likely	The most likely result of the hazard/event being realised	5
Possible	Has a good chance of occurring and is not unusual	4
Conceivable	Might occur at some time in the future	3
Remote	Has not been known to occur after many years	2
Inconceivable	Is practically impossible and has never occurred	1

These data can be obtained during the review of company statistics, documents and interviews.

##### 3.2.2 Severity of hazard

Severity can be divided into five categories. Severity is based upon an increasing level of severity to an individual’s health, the environment, or to property. **Table 2** indicates severity:

**Table 2: Severity of Hazard**

SEVERITY (S)	DESCRIPTION	RATING
Catastrophic	Numerous fatalities and irrecoverable property damage	5
Fatal	Approximately one single fatality/major property damage if hazard is realised	4
Serious	Non-fatal injury, permanent disability	3
Minor	Disabling but not permanent injury	2
Negligible	Minor abrasions, bruises, cuts, first aid type injury	1

**The Determination of Severity**

Severity is based on the increasing severity of the individual's health, the environment, or to property when the incident occurred. Determination of severity can be divided into five categories: Negligible, Minor, Serious, Fatal and Catastrophe. Severity is generally determined based on the following question: "Based on the environment and the present working environment, and the existing control measures, what are the worst accidents that can happen to people or property?"

**3.2.3 Risk assessment**

The results of analysis on risk can be presented in a variety of ways before decisions on risk control are made. For risk analysis that uses likelihood and severity in qualitative method, presenting the results in a risk matrix is a very effective way of communicating the distribution of the risk throughout the area in a workplace. Risk can be calculated using the following formula:

$$\text{Relative Risk} = L \times S$$

Where,

L = Likelihood

S = Severity

**Table 3: Risk Matrix**

Likelihood (L)	Severity (S)				
	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

To use the matrix, the first step is to find the severity column that best describes the outcome of risk. Then follow the likelihood row to find the description that best suits the likelihood that the severity will occur. The risk level is given in the box where the row and column meet. The relative risk value can be used to manage and facilitate necessary actions and plans such as:

- Regulatory requirements;
- Necessary personal protective equipment (PPE);
- Required training;
- Worker responsibilities;
- Specific sequence of steps to follow to complete the work safely;
- Required permits; and
- Emergency procedures.

Table 4: Risk Priority

RISK	DESCRIPTION	RATING
15 - 25	<b>HIGH</b>	A HIGH risk requires detailed preparations and plans on controlling the hazard. Execute a thorough risk assessment.
5 - 12	<b>MEDIUM</b>	A MEDIUM risk requires a planned approach to control the hazard and apply temporary measures if required.
1 - 4	<b>LOW</b>	A risk identified as LOW may be considered as acceptable and further reduction may not be necessary. However, if the risk can be resolved quickly and efficiently, control measures should be implemented and recorded.

### 3.3 Example of Application of Risk Assessment

These examples show how to determine the likelihood and severity of risk for the activities of a courier company, RM Courier Ltd. It should be noted that the rates of likelihood and severity of these risks vary from one company to another depending on the factors discussed above.

RM Courier Ltd.'s exposure to traffic hazards are similar to those that have been identified during the delivery process using a motorcycle courier. Most of the time (more than 90% of working time) a parcel is delivered using a motorcycle courier; thus, the probability for a courier delivery to be involved in an accident is higher. The company also records accidents and near misses involving employees, where the cases of road accidents involving motorcycle courier was 80% out of the total accidents recorded by the company.

The company also has control measures such as:

- o preparation of SOPs;
- o scheduling;
- o programmed "route planning";
- o training on defensive riding ;
- o a comprehensive vehicle maintenance programme, and
- o fitting equipment such as "reflective vest".

Based on the above factors, it is appropriate to put the likelihood of an occurrence as "Possible" (Rate level 4). Level 5 is too high because there are existing controls that have been implemented that are practical.

The severity was assessed as 4, which is "Death". This is due to a fatal accident which resulted from the exposure to traffic hazard that in general, has a high probability to cause a loss of life.

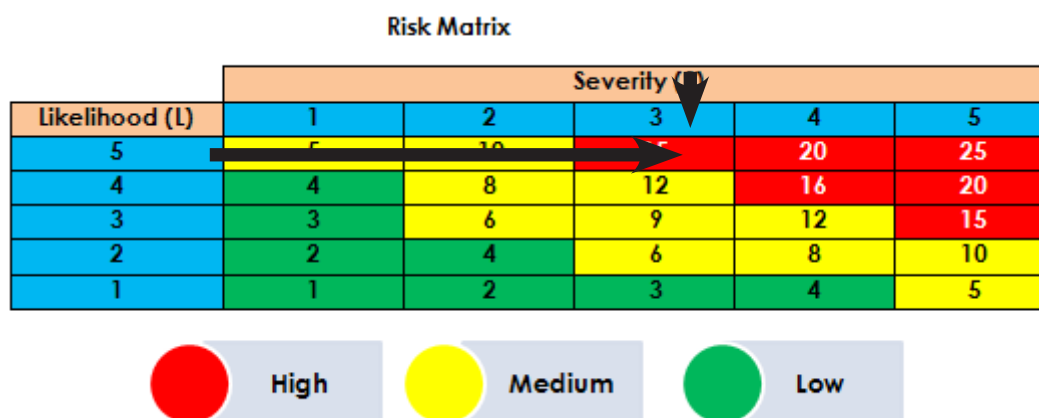


Figure 1: Example on Calculating Risk

Based on Figure 1, the columns on Severity (S) best describe the results of a risk. The line of likelihood (L) indicates the most appropriate descriptions of the possibilities for the severity of the incident to happen. Risk level is given in the box where the row and column meet. In this case, the risk is 20 (High). A HIGH risk requires immediate action in order to control the hazards as detailed in the control hierarchy. Actions taken must be documented in the form of risk assessment, including the date of completion. Refer to **Appendix G** for some real application of HIRARC example.

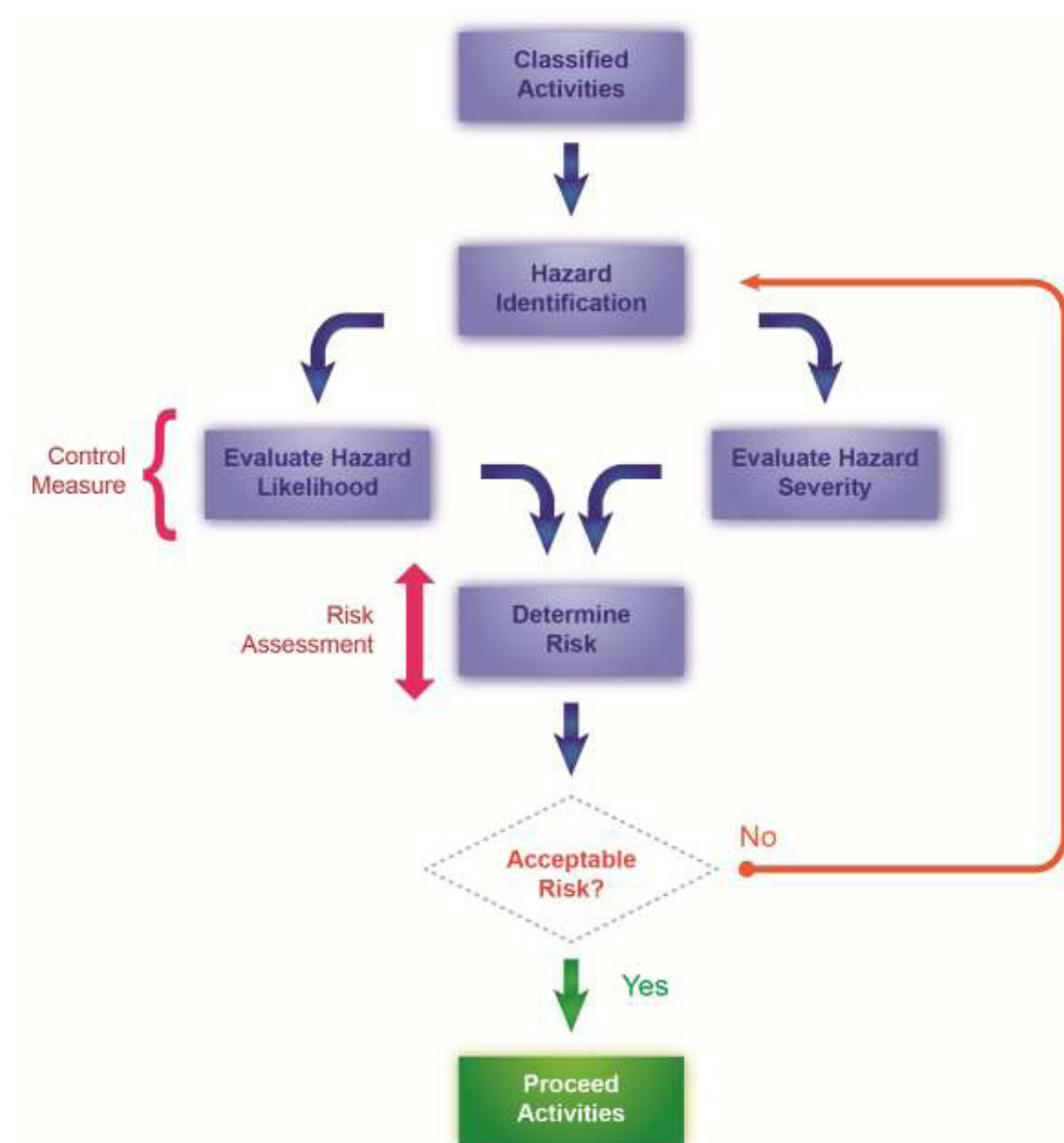
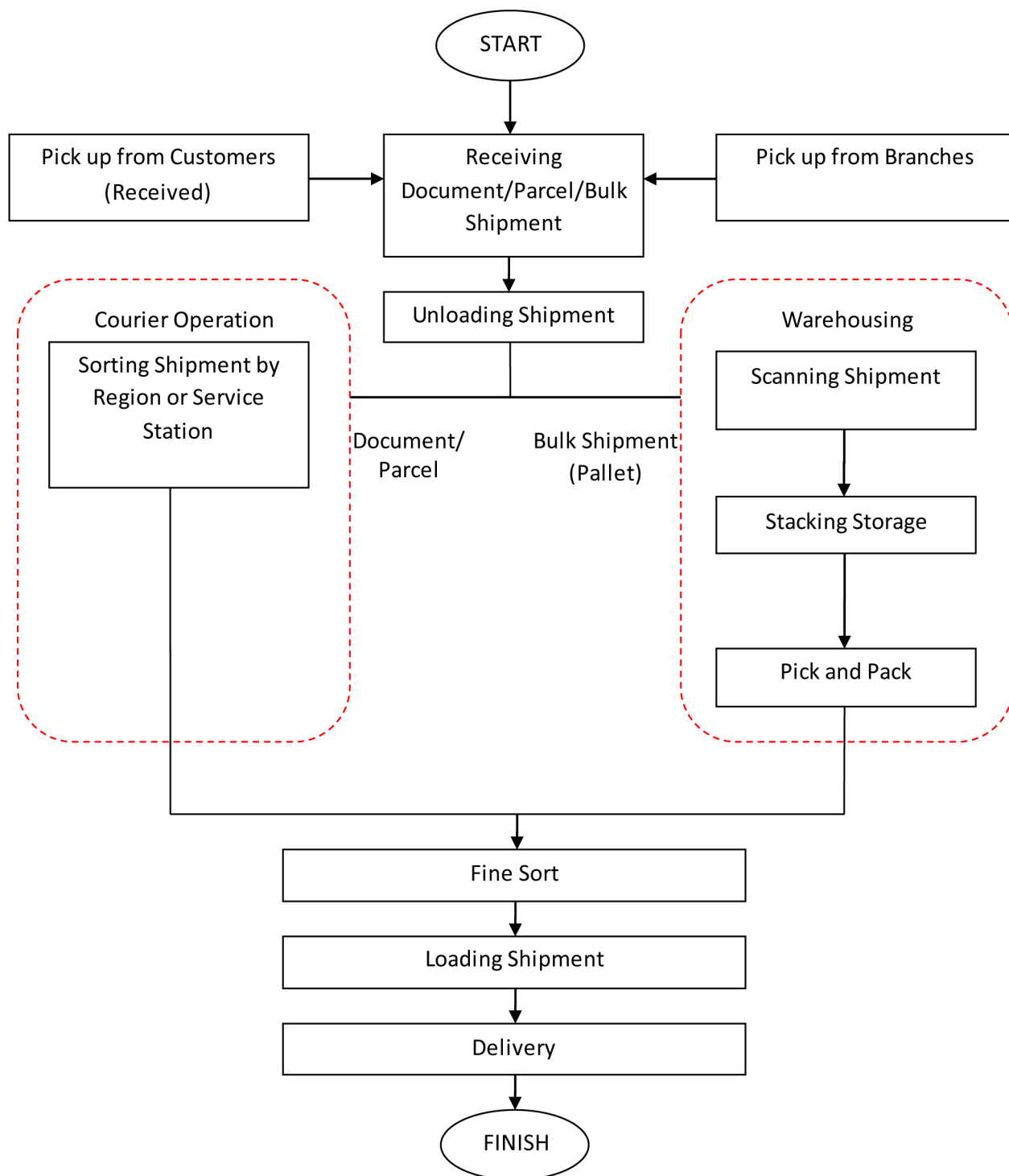


Figure 2: Hazard Identification, Risk Assessment and Risk Control (HIRARC) Process Flowchart

**4.0 COURIER ACTIVITIES****Figure 3: Process Flow for Courier Work Activities**

## 4.1 Pick up and Sorting Activities

### 4.1.1 Pick up Activity

Pick up activity refer to the process of collecting parcels and documents from customer's location. Works involved in this activity is driving vehicles (such as motorcycle or van) from stations / centres to customer at offices or private homes (on demand pick up).

### 4.1.2 Unloading Activity from Collection Vehicle

Collected parcels are taken to the hub for sorting process. Works activities involved at this stage are unloading parcels from the collection vehicles. This process involves drivers/hub workers to unload bulks parcel from the vehicle to the hub process system (conveyer). Activities involved are heavy lifting or manual handling.

### 4.1.3 Sorting Shipment Activities

Sorting is a process to segregate the shipment by zone, location and route. Employees will scan the shipment bar code and then separate the shipment by destination and delivery zone. The hub operation workers will sort the parcel manually according to the recipient addresses after scanning the bar code.

Table 5 shows some examples of hazards that arise from pick up and sorting activities. Hazards are identified and analysed by using history data or references to find out the consequences or effects that will arise from the hazards. The hazard and effect data will help in doing the risk assessment mentioned earlier in risk classification. This will lead to improvements to in solving the problems.

**Table 5: Pick up and Sorting Activities**

Reception and Sorting Activities	
Hazard	Consequences / Effects
Handling of heavy load and large packaging size.	1. Musculoskeletal injuries 2. Piles and Hernia
Exposure to the hazards of driving	1. Road Accidents
Exposure to extreme weather / environments	1. Health problems (respiratory problems, allergies, asthma and lung cancer) 2. Heat Stress (blackouts), Dehydration and Skin Irritation (Heat Rash)
Exposure to problematic customers and aggressive animals	1. Injury, Sexual harassment, Crime Problems and Stress
Exposure to unidentified and hazardous packaging	1. Scalds, burns and health effects (exposure to chemicals hazard and bio hazard)
Parcels Unloading Activities from Collection Vehicle	
Hazard	Consequences / Effects
Heavy loads and large size shipment handling from the vehicle	1. Musculoskeletal injuries 2. Piles and Hernia
Exposure to unidentified and hazardous packaging	1. Scalds, burns and health effects (exposure to chemicals hazard and bio hazard)
Dust from packaging (exposure to respiratory system and vision)	1. Health problems (respiratory problems, allergies, asthma and lung cancer)
Exposure to smoke and noise of vehicles	1. Health problems (respiratory problems, allergies, asthma and lung cancer) 2. Environmental pollution 3. Hearing Problem
Unstable arrangement of packages	1. Struck by heavy package 2. Physical injuries (fractures and wounds) 3. Damaged goods



Sorting Parcels Activities	
Hazard	Consequences / Effects
Exposure to sharp cornered parcel	1. Wounds and injuries
Exposure to heat in the warehouse	1. Heat Stress (blackouts), Dehydration and Skin Irritation (Heat Rash)
Exposure to dust and noise of machinery and equipment in the hub	1. Health problems (respiratory problems, allergies, asthma and lung cancer) 2. Environmental pollution 3. Hearing Problem
Unsuitable work schedules	1. Fatigue and exhaustion 2. Stress 3. Health problems 4. Sleep problems (sleep apnoea)
Handling heavy loads and large sizes	1. Musculoskeletal injuries 2. Piles and Hernia

## 4.2 Warehousing Activities

### 4.2.1 Scanning Activities

Warehouse operators will scan the packages' bar code to sort the packages (palletize) by area, customer, type of items and date (storage period) before arranging the packages on the racking system.

### 4.2.2 Tiered Storage Activities

The packages and loose items are arranged on tiered storage (racking system) before distribution according to specific time schedules. These activities require warehouse operators to operate lifting equipment (such as forklift, reach truck, stacker, etc) in order to arrange the packages on the racking system.



**Figure 4: Racking in warehouse**

### 4.2.3 Pick and Pack Activities

Pick and pack activity is a process which warehouse operators need to unload the packages from the racking system. Then the packages are re-sorted according to customers' orders. The packages will then be delivered to the respective customers.

**Table 6: Hazards and Effects of Warehousing Activities**

Scanning Activities	
Hazard	Consequences / Effects
The method of using unsuitable equipment repeatedly	1. Injuries and fatigue to hand and shoulder.
Exposure to dust	1. Health problems (respiratory problems, allergies and asthma)
Unstable arrangement of packaging	1. Struck by heavy package 2. Physical injuries (fractures and wounds) 3. Damaged goods
Infrared Exposure	1. Eye injury if misused
Tiered Storage Activities	
Hazard	Consequences / Effects
Excessive burden incurred by racks	1. Structure ruptures 2. Struck by heavy package 3. Physical Injury and Death 4. Damaged goods
Handling heavy loads by employees	1. Musculoskeletal injuries 2. Piles and Hernia
Working in non-ergonomic postures (looking up and bending)	1. Musculoskeletal injuries
Unsafe handling of forklift, stacker and other auxiliary equipment for lifting	1. Flip over of forklift or falling of racks 2. Damage to goods or racking structure 3. May cause injury or death to employees around
Working at height	1. Trip and fall from height 2. Death from falling 3. Physical injuries
Unstable/high packages	1. Struck by heavy parcel 2. Physical injuries (fractures and wounds) 3. Damaged goods 4. Death
Unloading Packaging Activities	
Hazard	Consequences / Effects
Working in non-ergonomic postures (looking up and bending)	1. Musculoskeletal injuries
Unsafe handling of forklift, stacker and other auxiliary equipment for lifting	1. Flip over of forklift or racking falls 2. Damaged goods or racking structure 3. May Cause injury or death to employees around
Unstable/high packages	1. Struck by heavy parcel 2. Physical injuries (fractures and wounds) 3. Damaged goods 4. Death
Unstable packages arrangement in the container	1. Struck by heavy package 2. Physical injuries (fractures and wounds) 3. Damaged goods
Unsafe handling of forklift, stacker and other auxiliary equipment for lifting	1. Flip over of forklift falling of racks. 2. Damage to goods or racking structure. 3. May cause injury or death to employees around.
Repacking Activities	
Hazard	Consequences / Effects
Expose to unidentified dangerous goods	1. Scalds, burns & health effects (exposure to chemicals hazard and bio hazard)
Unstable arrangement of packages	1. Struck by heavy package 2. Physical injuries (fractures and wounds) 3. Damaged goods 4. Fatal
Dust exposure	1. Health problems (respiratory problems, allergies and asthma)
Heavy load handling by employees	1. Musculoskeletal injuries 2. Piles and Hernia
Working in non-ergonomic postures (looked up and bending)	1. Musculoskeletal injuries
The use of unsafe hand tools (sharp, broken, etc.)	1. Wounds, cuts and injuries

### 4.3 Delivery Activities

Delivery activities is a process where shipment are delivered to customers via vehicles such as trucks, vans and motorcycles by the couriers, or agents and contractors appointed by the respective courier company.

#### 4.3.1 Line Haul Delivery

Line haul is a long distance delivery using lorries to service stations according to regions. The drivers are also responsible for loading the packages into lorry and unloading packages out of the lorry.

#### 4.3.2 Local Delivery (Short Distance)

Local deliveries are also called as direct delivery. Direct delivery is where the courier departs from the station to the customer's location using a small truck, van or motorcycle within their respective routes.

**Table 7: Delivery Activities**

Line Haul Delivery Activity (Lorry)	
Hazard	Consequences / Effects
Road conditions that are not perfect (slippery, hollow, sharp bends etc.)	1. Accident (Injuries and Death) 2. Damaged vehicles and goods
Limited visibility due to weather and time (rain, night, fog and fewer streetlights)	
The use of vehicles that are not regularly maintained	
Negligence and misconduct of the driver and other road users (not obeying traffic rules)	
Driving under the influence of alcohol and/or drugs; stress, drowsiness and fatigue.	
Driving in a long period	
Local Delivery (Short Distance) Activity Using Vans	
Hazard	Consequences / Effects
Poor road conditions	1. Accident (Injuries and Death) 2. Damaged vehicles and goods
The use of vehicles that are not regularly maintained	
Negligence and misconduct of the driver and other road users (not obeying traffic rules)	
Driving under the influence of alcohol and/or drugs; stress, drowsiness and fatigue	
Handling package manually	
Exposure to problematic customers and aggressive animals	
Dust and emission during on the road	
Hot weather and slippery roads caused by rain	
Pressure (rush, traffic congestion, limited parking, etc.)	
Local Delivery (Short Distance) Activity Using Motorcycle	
Hazard	Consequences / Effects
Less than perfect and narrow road conditions	1. Accident (Injuries and Death) 2. Damaged vehicles and goods
The use of vehicles that are not regularly maintained	
Negligence and misconduct of the driver and other road users (not obeying traffic rules)	
Driving under the influence of alcohol and/or drugs; stress, drowsiness and fatigue	
Handling package manually	
Exposure to problematic customers and aggressive animals	
Dust and emission during on the road	
Hot weather and slippery roads caused by rain	
Pressure (rush, traffic congestion, limited parking, etc.)	

## 5.0 MANUAL HANDLING

Manual handling is defined as any activity requiring the use of force exerted by a person in lifting, lowering, pushing, pulling, carrying, holding or restraining a person, animal or thing. In general, the term manual handling is defined as moving anything by using force. Manual handling tasks are identified as the main cause of back injury. Therefore, it is important that manual handling training is given to reduce the risk of injury, especially back injury.

According to the Occupational Safety and Health Act 1994, one of the objectives of the Act is "to promote an occupational environment for person(s) at work which can be adapted to their physiological and psychological needs." It is also the duty of every employer to ensure, as far as is practicable, the safety, health and welfare at work of all the employees.

Section 15 (2) (b) states the general responsibilities of the employer and the self-employed as follows:

*"The making of arrangements for ensuring, so far as practicable, safety and absence of risks to health in connection with the use or operation, handling, storage and transport of plant and substances"*

According to section 12, Factories and Machinery Act 1967:

*"No person shall be employed to lift, carry or move any load so heavy as to be likely to cause bodily injury to him."*

Several ways to reduce the risk of manual handling activities are:

- improving the task;
- improving the working environment; and
- reducing the load weight for manual handling.

The manual handling activity should be designed to suit the employees' capability and capacity. The management should keep all the records of training such as employees who have been trained, the content of the training, etc. The management should ensure that all the employees receive basic manual handling training. It is the duty of the supervisors to ensure good practices be implemented and to encourage employees to adopt the correct lifting techniques.

### 5.1 Hierarchy of Control for Manual Handling Activities

- a. **Elimination** - Eliminate the risk by completely removing the hazard (Usage of mechanical assistant)
- Forklift and trolley to move large amount of load,
  - Two Wheeler
  - Vacuum hoist
  - Power pallet truck,
  - Drum dolly



(a) Forklift



(b) Powered Pallet Jack



(c) Vacuum Hoist



(d) Trolley

**Figure 5: Example of Mechanical Assistant Tools**

- b. Substitute** – Substitute the hazard with another lower risk material; for example, use a 10-kg bag instead of a 30-kg bag, or sliding instead of lifting
- c. Isolation** – This is to isolate the hazard from the person at risk; for example, isolate those who are at risk of back pain (old age workers) from performing the manual handling task and isolate those employees who have experienced back injury from performing manual handling activity
- d. Engineering** – This is to minimise the risk by engineering design; for example, provide adjustable workstations to avoid unnecessary reaching or bending and design workstation layout where the employees are not required to twist, bend or to stretch postures when performing a task
- e. Administration** –Administrative measures can minimise the risk by:
- Job rotation
  - Implement a safe lifting policy
  - Provide appropriate training
  - Buddy system / team lifting
  - Exercise programme such as back strengthening programme
  - Personal selection for manual handling task
  - Appropriate task break
- f. Personal Protective Equipment (PPE)** – Provides appropriate PPE such as using grip gloves (refer to Chapter 9.0).

## 5.2 Proper Manual Handling Techniques

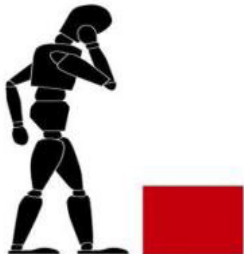
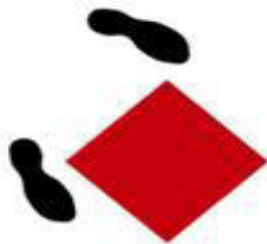



<b>Step 1:</b> Plan the lift. Identify where the load should be transferred to and use appropriate handling devices, if available. Determine if the load can be transferred alone or if assistance is needed. Ensure that there is no obstruction along the way.	
<b>Step 2:</b> 	Place the feet apart and ensure you are totally balanced. The load should be as close as possible to your body. Bend your knee and not the back. Keep the back straight.
<b>Step 3:</b> 	Get a firm grip. Always consider the type of gloves used since certain gloves will require extra gripping force. The recommended gloves for manual handling activities are power grip gloves.
<b>Step 4:</b> 	Do not jerk and avoid sudden movement. Lift gently and keep control of the load. Move the feet and do not twist your body when turning to sides.
<b>Step 5:</b> 	If precise positioning of the load is necessary, put it down first, and then adjust it according to a desired position.
	

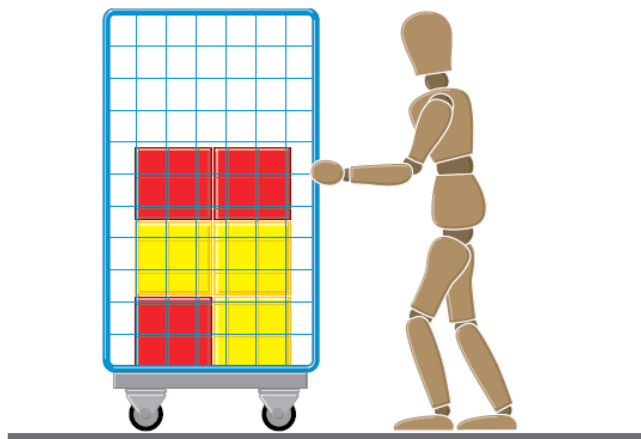
Figure 6: Proper manual handling techniques



### 5.3 Roll Cages

Roll cages (also known as roll containers or roll pallets) are commonly used in warehousing, storage and distribution. Musculoskeletal and other injuries arise from:

- pushing/pulling loaded roll cages, especially up slopes, over steps or on uneven floor surfaces;
- trying to prevent roll cages overbalancing (and crush injuries where this was not successful);
- repetitive loading and unloading of roll cages;
- trapping hands while assembling/dismantling cages;
- trapping hands and other parts of the body between the roll cage and a wall, side of vehicle etc;
- feet being trapped under the castors; and
- roll cages falling off lorries (e.g. from the tail lift) during loading and unloading, often causing the most serious injuries.



**Figure 7: Roll cages**

#### Risk assessment for roll cages

Carry out a risk assessment for each roll cage application, covering both on-site and off-site risks including:

- pushing/pulling options;
- forces required to move the roll cage;
- the effect of slopes and terrain/floor surface problems;
- availability of safe handles;
- visibility for the operator;
- hand/body/foot trapping risks;
- slips and trips;
- correct lifting methods for loading and unloading the roll cage; and
- risks associated with loading/unloading roll cages onto lorries (e.g. with tail lifts).

#### Safe working with roll cages

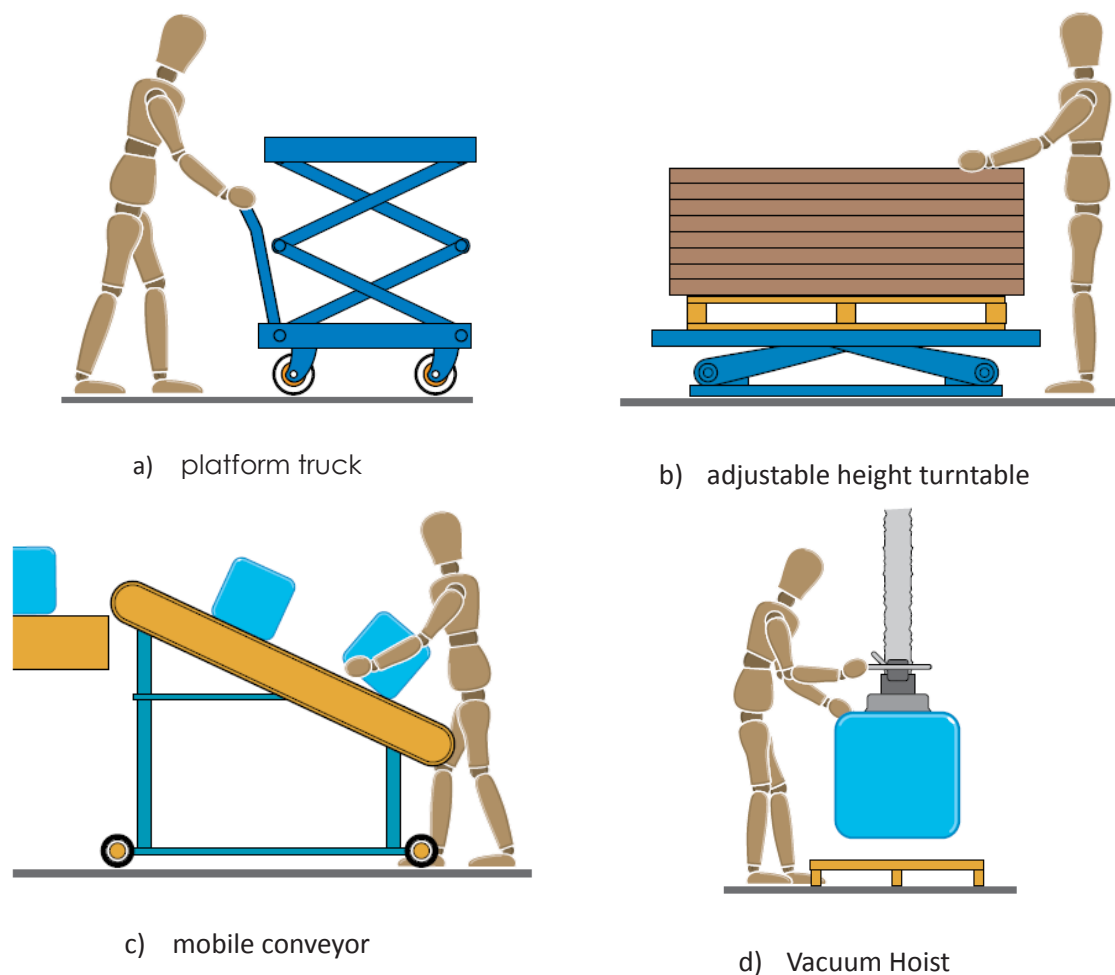
Employees should be trained to use roll cages properly and to practise a safe system of work. The following precautions have been shown to reduce injuries. Operators should:

- move only one roll cage at a time;
- use the handles provided;
- move the roll cage no faster than a walking speed;
- wherever possible, push the cage rather than pull, as this is ergonomically better and will reduce the risk of foot trapping;

- seek help from another person when moving a roll cage up or down a ramp or on an uneven surface or when a cage is heavily loaded;
- not ride in or on roll cages, as they can easily overturn or trap the operator;
- wear gloves and safety shoes when moving roll cages – softer sole shoes will reduce slips;
- wear gloves to protect hands and fingers when assembling cages;
- stack heavier items at the bottom of the roll cage to keep the centre of gravity as low as possible (the correct lifting technique is particularly important at this low level);
- not overload the trolley;
- not load the cage above the load line or above the level where the operator can see over the load; and
- move no more than three to five empty, nested roll cages at one time (see manufacturer's recommendations).

#### 5.4 Trolley

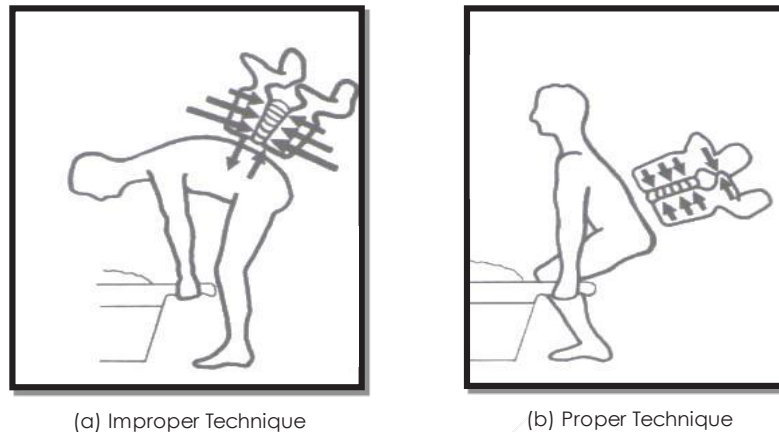
Employers need to select a suitable trolley designed for employees to use. Trolleys are designed to be used on level, even surfaces. If used on a gradient, there may be a risk of trolleys freewheeling out of control, causing injury to people. Trolleys should not be used on gradients unless a safe system of work is adopted to prevent such risks from occurring. Employers need to carry out a manual handling assessment on the use of trolleys and a system for inspection and maintenance of trolleys.



**Figure 8: Type of trolleys & manual handling tools**

### 5.5 The risk of improper lifting technique

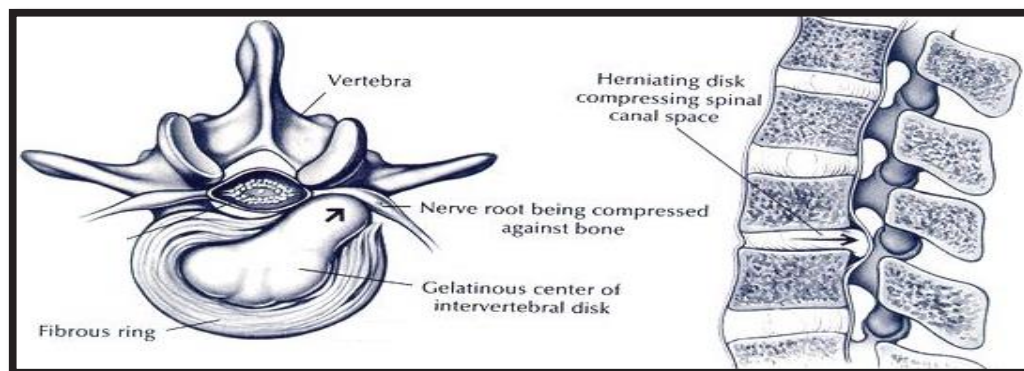
The pictures below illustrate the force experienced by the disc when lifting using both improper and proper lifting techniques. When the load is lifted in a bending position, one side of the disc is experiencing more force than the other side, which leads to disc hernia. When the load is lifted while the back is straight, the force is normally distributed at the disc.



**Figure 9: Differentiation of improper and proper techniques of lifting**

### 5.6 Musculoskeletal Disorder

Excessive use of a certain body part results in wear-and-tear to muscles, tendons, joints and surrounding tissues. In the long term, it may result in the incapacitation of the related body part.



**Figure 10: Disc herniation/ Slip Disc**

### 5.7 Body Discomfort Survey

Information from surveys on employees with symptoms of musculoskeletal disorders (MSDs) will enable the management to identify potential jobs with ergonomic risk factors. Surveillance techniques can be either reactive or proactive in nature; reactive techniques are those that rely on data already available (i.e. accident logs - JKKP 8, accident reports - JKKP 6 & 7, loss history) whereas proactive surveillance looks for information that may indicate future events.

The **Physical Discomfort Survey** is intended to assist an employee to identify job tasks or operations within the organisation that have the potential to cause injury. The survey will help to identify individuals who may exhibit symptoms of work-related MSDs.

It can be used:

- as an initial assessment of the entire workforce (by department/task),
- for individuals in a specific job category, or
- for a particular machine.

The **Physical Discomfort Survey** can be conducted anonymously. It can be administered in an attempt to identify and pre-empt problems preceding a real injury, or it can be used in a “before and after” format when modifications are made to particular job tasks. Types of discomfort that may be identified using this method are localised discomforts, numbness, tingling sensation, aches and pains. Some examples of Physical Discomfort Questionnaires are listed in **Appendix B**. It is suggested that this survey be conducted at specified interval of time (e.g. yearly basis or twice a year). A graphical presentation on the number of complaints for a specific department/task can be presented as below:

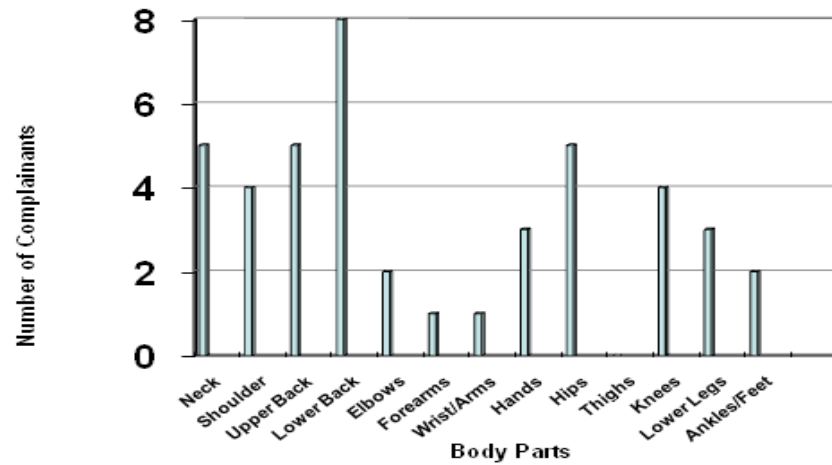


Figure 11: Examples of complaints analysis

## 6.0 TRANSPORTATION MANAGEMENT

Transportation management is important in ensuring the safety and health of employees while making delivery, which is the core purpose of courier services. Employees are exposed to risk while driving or riding. Courier Companies should refer to **Occupational Safety and Health Industry Code of Practice for Road Transport Activities, 2010** to ensure the safety and health of drivers and riders.

### 6.1 Driver management

The employer should provide drivers with driver management programmes to ensure the safety and health of these personnel while maintaining the working environment at optimum levels. In providing driver management programmes, the following factors should be considered:

- a) driver intake procedure;
- b) driver categorisation;
- c) training;
- d) driving procedure;
- e) driving hours and working hour limits;
- f) driver rotation system;
- g) driver monitoring; and
- h) driver's health and welfare.

Essential elements of driver management are as per **Appendix C**.

#### 6.1.1 Driver intake procedure

The employer shall identify the driver's background before taking him into service. The following needs to be done:

- a) examine driver's record from database of responsible authorities such as the police and Road Transport Department (RTD);
- b) conduct preliminary tests on competency or proficiency level of driver; and
- c) require a driver taken into service to undergo health screening at any hospital or clinic or health centre determined by the employer, and the cost of such health screening shall be borne by the employer.

#### 6.1.2 Driver categorisation

Employers shall categorise drivers into several categories: professional, skilled and semi-skilled drivers. The following shall be taken into consideration:

- a) driver card system (KEJARA system) – demerit point;
- b) licence classification;
- c) driver card system – contains information on work experience, basic medical information, particulars of licence, summonses, etc deemed essential (updated at time of renewal of public service vehicle, PSV, licence or goods vehicle driving licence, GDL); and
- d) category of drivers based on skill, competence (types of vehicle such as lorry, bus) and performance (consumer feedback).

#### 6.1.3 Training and changes in thinking patterns

The employer shall identify and provide sufficient training associated with safety and health to all workers to ensure sufficient understanding, knowledge and skills. It would enable workers to perform their work in a safe manner. The training provided shall include:

- a) training of a technically skilled nature such as defensive driving, emergency response, vehicle operational, handling of apparatus and substance, and other fit and proper training; and
- b) mind training such as conducting motivation seminars, campaigns, positive thinking and other appropriate trainings.

A combination of technical skills and positive thinking are important because with such training provided by the employer, it is hoped the employees, especially the drivers, would be able to carry out their work properly while reducing the risk of accidents or minimising the impact of accidents if they do occur. All safety and health training shall be continuous, periodical and scheduled. Each training session conducted shall be recorded.

#### **6.1.4 Driving procedure**

Employers shall provide a checklist for the obligatory acts a driver needs to perform before and while driving, as well as upon reaching his destination. Such obligatory acts require that:

- a) the driver's records are examined at the one-stop check centre when preparing the duty roster;
- b) the drivers are fit and they feel good while driving by taking nutritious food;
- c) the drivers do not take any medicine which may interfere with driving (such as medicines that cause drowsiness);
- d) the drivers be examined by a qualified supervisor to ensure they are in a fit state to drive;
- e) the drivers bring along important documents (valid E licence, valid GDL/PSV licence, log book, identity card or passport, and other documents deemed necessary);
- f) the drivers wear spectacles if they need to wear spectacles;
- g) the drivers to report for duty not less than 30 minutes before a journey;
- h) the drivers enter and report themselves to the supervisor and checking roster;
- i) the drivers carry out daily vehicle checks on the checklist before and after journey; and
- j) the drivers ensure that the vehicle has sufficient fuel (petrol/diesel), and refuelling it if necessary, and that safety procedures are complied with.

#### **6.1.5 Basics of defensive driving**

##### **Defensive driving training**

Safety is defined as a condition of being protected from or unlikely to cause danger, risk or injury. Drivers should prioritise safety orientation techniques which can be instilled through training and education, where the drivers must have the ability to control any situation that may arise and avoid any untoward accidents. Good drivers should be alert, knowledgeable in aspects of safety, competent in vehicle operating skills and in making decisions. In safety driving, drivers need to understand, practise and comply with the following:

- a. Safe Driving Principle
- b. Hazard Zone
- c. Why speeding is a Lose-Lose Act
- d. Always make sure they see you
- e. Key Defensive Driving
- f. Braking distance & reaction
- g. Make sure the vehicle is safe to drive
- h. Safety Belt



## Safe driving principles (Do's and Don'ts)

Table 8: Safe driving principles that a driver should do

DO's	
i.	Plan every trip so that the driver has sufficient time to reach the destination.
ii.	Get enough sleep and rest before going for a long journey.
iii.	Ensure that the vehicle is inspected and in safe condition before the trip.
iv.	Ensure shoes are not wet, adjust seat and side mirror before driving.
v.	Always wear safety belt (if any).
vi.	Always obey traffic rules.
vii.	Always drive safely and responsibly by practising the following: <ol style="list-style-type: none"> <li>Identify Hazard</li> <li>Hazard Analysis</li> <li>Decision making</li> <li>Preventing accidents</li> </ol>
viii.	Always be responsible, patient and considerate to other road users in various conditions.
ix.	Always hold the steering with both hands.
x.	Always predict and identify hazards or obstacles while driving to avoid accidents.
xi.	Slow the vehicle when approaching pedestrian crossings area.
xii.	Reduce speed at rarely used road.
xiii.	Overtake only if need to.
xiv.	Adjust speed accordingly based on road condition and weather.
xv.	Always view the rear view mirror and side mirror while driving to be aware of the condition of the vehicle at the rear.
xvi.	Be careful of blind spot.
xvii.	Be more focused and alert when reaching crossroads.
xviii.	Be extra careful and cautious around housing areas, factory, village and corner.
xix.	Stop the car and rest if drowsy while driving.
xx.	Reduce speed when road is wet to avoid skidding and hydroplaning.
xxi.	During a rainy day, add distance while tailing other vehicles, switch on the light, slow the vehicle and be careful.
xxii.	Before turning to a corner, reduce speed, change to a suitable gear and drive on the left.
xxiii.	If there is a vehicle that intentionally wants to overtake your vehicle, slow your vehicle and drive to the left of the road.
xxiv.	Use low gear, exhaust brake (if any) and foot brake while going downhill.
xxv.	Always view side-view mirrors and move eyes to know the situation around.
xxvi.	Always look ahead so that a fast decision can be made.
xxvii.	Make sure that people notice your presence by using a signal light and vehicle horn.
xxviii.	Practise 4-seconds rule while following the vehicle.
xxix.	Before reversing the vehicle, make sure that there are no obstacles, and view rear-view mirror and side-view mirror while reversing.
xxx.	Stop the vehicle if there are any problems or if warning signals light up red.
xxxi.	Make sure that a package is placed securely and tied so that it will not move easily.

**Table 9: Safe driving principles that a driver should not do**

DON'Ts	
i.	Driving after taking medicine that can cause drowsiness
ii.	Taking illegal substances such as drugs or alcohol while driving
iii.	Driving when emotionally unstable
iv.	Using mobile phone or any other equipment that can distract concentration
v.	Driving exceeding the speed limits
vi.	Driving in the wrong lane
vii.	Driving a vehicle that is found unsafe during inspection
viii.	Driving dangerously and carelessly
ix.	Driving in a rush to deliver to a client
x.	Continue driving while feeling drowsy
xi.	Eating while driving
xii.	Overtaking another vehicle in an unsafe manner
xiii.	Speeding up while another vehicle tries to overtake you
xiv.	Using high beam lights when tailing or when being the opposite of another vehicle at night
xv.	Move and make sudden stops in unsuitable conditions
xvi.	Driving non-stop without rest
xvii.	Driving in the fast lane while on a highway
xviii.	Driving a vehicle with bald tires
xix.	Driving fast in wet condition
xx.	Using high gear while going downhill
xxi.	Reversing vehicle without being certain of the situation at the back of the vehicle

### Hazard Zone

Drivers need to identify hazards while driving on the road and able to make a quick decision to react towards the hazard. Hazards include:

- Road Conditions (junction, corner, roundabout, steep hill, ongoing road work, traffic lights, wet road)
- Other road users (pedestrians, schoolchildren, animals, motorcyclists, cyclists)

### The Key in Defensive Driving

#### 1. **To prevent accidents, the driver must be able to:**

- recognise the hazard
- understand what defensive methods to use
- act in time to prevent an accident
- practise safe driving principles

#### 2. **To Recognise Hazard Successfully, the Driver Must:**

- prevent himself from being apprehensive by the actions of other drivers
- give himself enough time to make proper adjustments
- identify hazards early and predict how they will affect his driving methods
- avoid driving by merely staring at the vehicles ahead but should move eyes to identify all traffic conditions
- scan the road every 12 to 15 seconds ahead when driving in town, looking from one side of the road to the other
- scan the road every 20 to 30 seconds when driving on a highway
- scan to the next hill or curve on the highways.

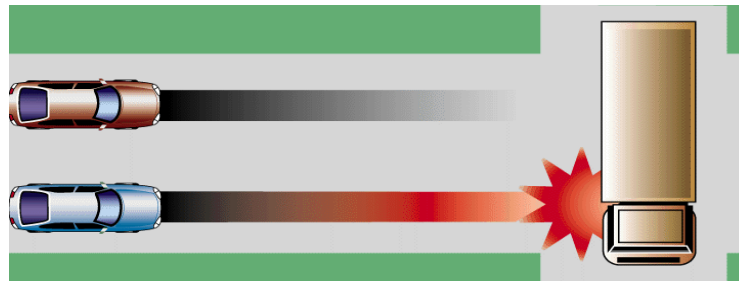
### 3. *There Are Basically Four (4) Options in Avoiding an Accident*

- Brake (either by stopping or slowing down the vehicle)
- Steering the vehicle (either to the left or right)
- Tap the horn to communicate your presence and intentions to the other vehicle and / or pedestrian.
- Reduce speed

### 4. *Safe Braking Distance*

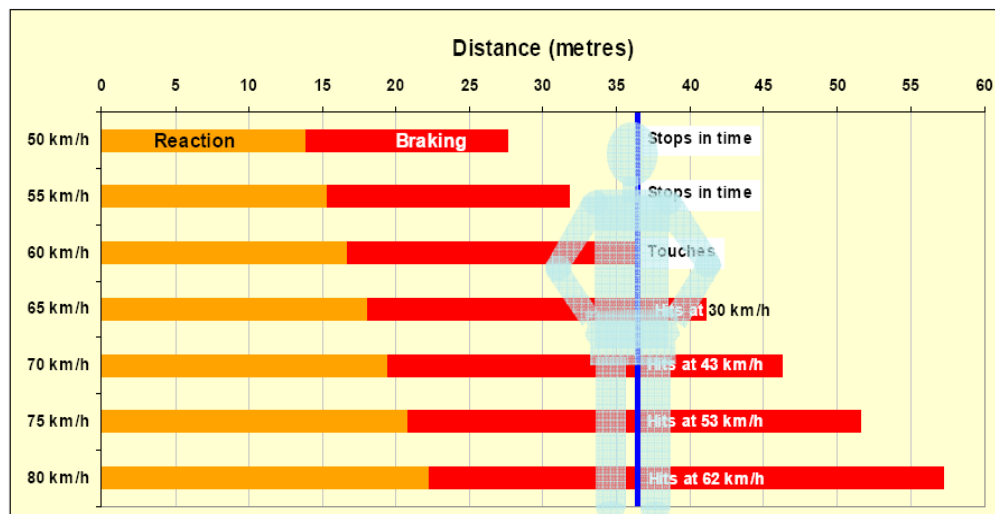
Braking distance varies depending on the types of vehicle, load, road surface, tyre condition, operator reaction time, etc. The average reaction time for a driver to be aware of potential accidents and stop the vehicle is 0.75 seconds. With the total reaction and braking time, the driver will know the distance the vehicle travels before stopping.

Figure 12 explains the relationship between speed and braking distance required for safe braking. The red car records travelling at a lower speed compared to the blue car. Therefore, the blue car would need extra time and distance for safe braking.



**Figure 12: Braking Distance at Different Vehicle Speed**

Figure 13 demonstrates how a vehicle with the same load, driver and road condition stops when travelling at different speeds. An illustration of a vehicle travelling at 5km/h in speed may result in an unexpected disaster. For example, if the vehicle is travelling at 60km/h, it could hit a pedestrian who is 36 m away. On the other hand, if the driver increases his speed to 65km/h, he could hit the pedestrian with an impact of 30km/h.



**Figure 13: Detailed Braking Distance at Different Vehicle Speeds**

## 5. Make sure the vehicle is safe to drive

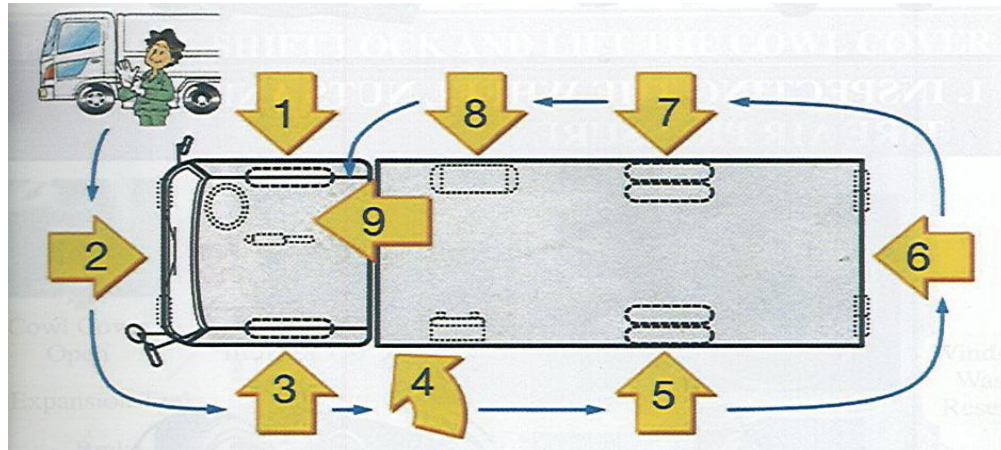


Figure 14: Steps in checking vehicle

- Check the vehicle in detail according to the daily vehicle inspection form.
- Check that all tyres and wheels are in good condition.
- Ensure there is no leakage.

## 6. Safety Belt

- Avoid from being thrown out in case of a collision
- Reduce body movement accident - Steering Wheel
- Wearing the seat belt is mandatory by law

## 7. Proper Loading/unloading (line haul)

It is important for drivers not to overload items and leave them in a disorderly manner as it will affect the steering, braking and speed control. Overloading can cause:

- loss of manoeuvrability of vehicle
- brake system to fail when driver applies the brakes
- vehicle's suspension system to become susceptible to failing

Loading goods in the wrong way into a vehicle can be a precursor to causing accidents. It is important to ensure that goods mapping the centre of gravity be loaded in the middle of the truck tray. These goods should always be at the lowest level point if possible (goods should not be stacked too high on each other). Also, goods should not be loaded on either side of the tray.

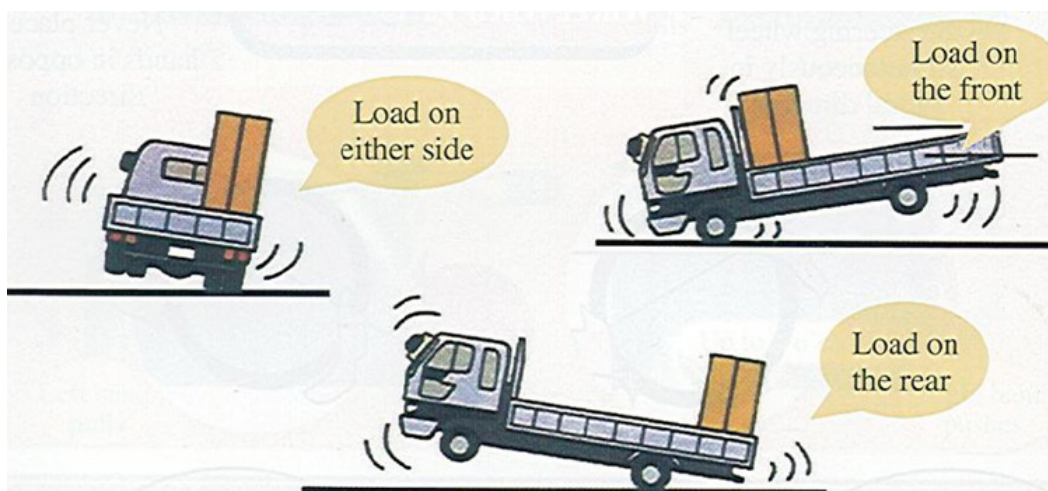


Figure 15: Load distribution on vehicle

**Emergency Response**

## a. Hydroplaning

Hydroplaning occurs when water on the road surface accumulates in front of the vehicle's tyres faster than the weight of the vehicle can push it out of the way. The water pressure can cause the vehicle to skim and slide on top of a thin layer of water between the tyres and the road. Three factors can cause hydroplaning:

- i. Vehicle Speed
- ii. Bald Tyres
- iii. Deep stagnant water

To avoid hydroplaning, a driver **should not press the brakes** and **steer the steering wheel**. The reasons are as follows:

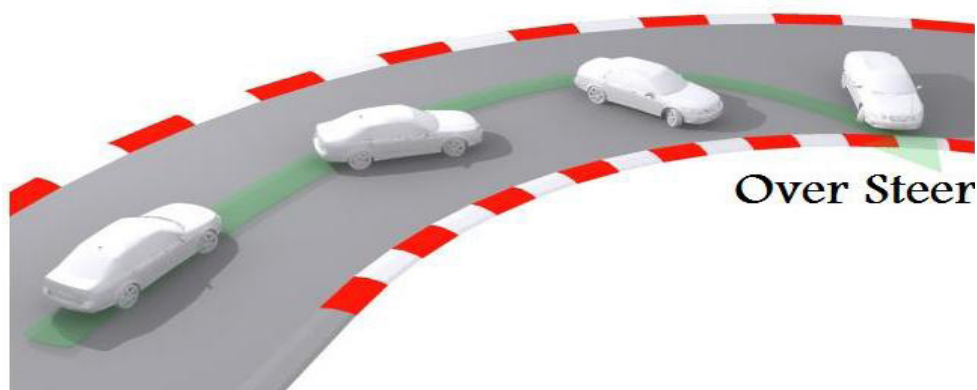
- i. Sudden brakes and turn can cause the vehicle to slide.
- ii. "Hydroplaning" can cause loss of fraction and control; the best thing is to reduce speed.

Drivers should also hold the steering wheel firmly to ensure that the vehicle is stable. If it is necessary to press the brake, press it gently and repeatedly. If it is raining, drivers should:

- i.wipe shoe soles on the rubber mat or car carpet before travelling;
- ii.check headlights, rear lights, brake lights and signals;
- iii.check the tyres;
- iv.replace wiper regularly;
- v.avoid following large vehicles closely;
- vi.turn on the lights and DO NOT turn on emergency lights;
- vii.keep the vehicle to the centre as possible if the main or trunk road is the only option;
- viii.make sure the distance between both the vehicles is safe when driving on the highway; and
- ix.be aware that the rain after the dry season is the most dangerous.

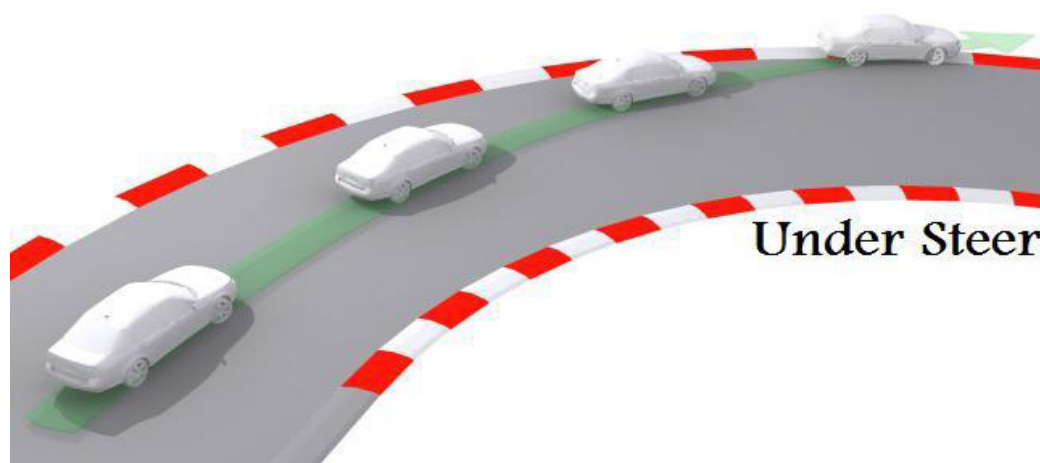
## b. Over steer / under steer

Over steer and under steer are inherent characteristics of a vehicle by virtue of design and cannot be altered or eliminated unless drastic modifications are made to the vehicle's suspension.



**Figure 16: Over steer vehicle**

**Over steer** is when the rear wheels of the vehicle make a larger turning radius than intended as when compared to the front wheels. In other words, the front wheels tend to turn more than intended, and this has the effect of "throwing" the rear of the vehicle out of its alignment. **Braking does not help to overcome over steer** and may actually make it worse because braking **causes a weight shift to the front**, making the rear relatively lighter and even more prone to lose its grip.



**Figure 17: Under steer vehicle**

**Under steer** is when the front tyres reach their fraction limit before the rear tyres. As a result, the front end of the vehicle makes a larger radius of travel than intended, compared to the rear of the vehicle. In other words, the vehicle turns in a wider area than intended, but no skidding occurs. Under steer can be dealt with by **reducing power, together with gentle, judicious braking**. This shifts the vehicle's weight to the front, allowing the front wheels to regain fraction and control.

c. Skidding

Skidding is usually caused **by speeding and exacerbated by adverse road and weather conditions**. The best course of action is to **reduce power** to the driving wheels and straighten the steering wheel momentarily until the front tyres grip. Then steer it gently.

d. Driver's responsibilities in the event of an accident:

- i. Do not panic.
- ii. Stop at the scene immediately.
- iii. Switch on the hazard lights.
- iv. Be careful of fire and do not smoke.
- v. Give assistance to the injured; do not move the injured unless necessary.
- vi. Call the police and management immediately.
- vii. Act appropriately and exhibit good manners.
- viii. Do not sign any documents from any person(s) or agent(s) of unrecognised workshops.
- ix. Find out information such as the registration number, the name of the driver, vehicle particulars and phone numbers of the party or parties involved.
- x. If the vehicles cannot be moved, get the approval from the management before deferred. Make sure it is towed to the police station or the nearest office.
- xi. Do not make a police report immediately; you can make a complaint within 24 hours.
- xii. Prioritise medical treatment (if necessary).

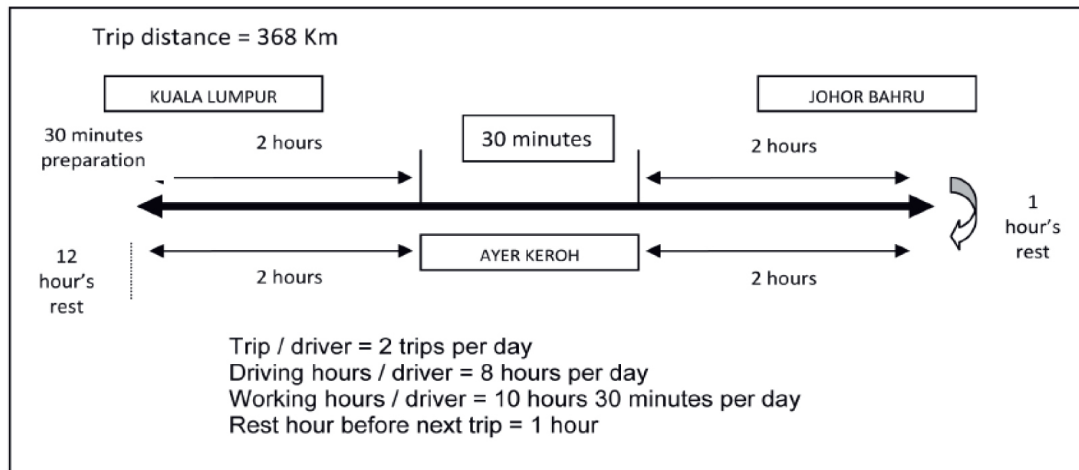
#### **6.1.6 Driving hours and working hour limits**

The employer shall provide the drivers a proper driving and working hour system. It is crucial to set up the policy as the driver's fatigue or tiredness after a long bout of driving may pose severe risks while driving. The matters that need to be considered but subject to the prevailing acts, if applicable are:

- a) non-stop driving for a maximum of 4 hours;
- b) total of 8 hours of driving per day (maximum);



- c) total of 12 hours of work per day (maximum);
- d) 30 minutes of rest per 4 hours of journey;
- e) one (1) day of rest after every 6 days of work; and
- f) a minimum of 12 hours of rest before starting a journey.



**Figure 18: Example of a single drive system for one trip**

#### 6.1.7 Driver rotation

The employer shall formulate a driver rotation system for long trips. This is to avoid the driver from being exhausted and exhibit fatigue due to very long driving hours, which may lead to a loss in concentration while driving and may increase accident risk. The drivers' roster shall be properly maintained and updated.

#### 6.1.8 Driver monitoring

The employer shall always monitor his employees especially the drivers, to ensure that the drivers constantly comply with the safe working procedure at the workshop and the driving procedures while operating vehicles. Some of the monitoring methods are:

- a) to always check the vehicle's daily inspection form to ensure the driver examines the vehicle on a daily basis;
- b) to inspect the driver's record from the database of the authorities such as the Police and the Road Transport Department (RTD). This is necessary to find out whether the driver has any traffic offence records such as exceeding the permitted speed limit, double-line overtaking and other offences; and
- c) provide a channel for complaints such as complaint/suggestion box and a complaint form for customers to direct their complains to the employer relating to driving patterns and driver's attitude. The employer shall pay serious attention to each offence or complaint. The driver shall be given advice and counselling so that he may amend his driving habits and attitude.

#### 6.1.9 Driver's Health and Welfare

The employer shall provide guidance for its employees, especially the drivers to ensure their well-being in terms of health, physical alertness and so on.



The employer's responsibilities are as follows:

- a) record periodical medical examination;
- b) ensure that the worker is not allowed to work when not fit;
- c) use a relief driver if the driver is not fit enough to drive his vehicle;
- d) provide information relating to health care and well-being especially when driving; for example, a physical exercise manual when stopping to rest;
- e) provide information and educate workers, especially the drivers, on methods to manage pressure, exhaustion and fatigue resulting from driving activity and work pressure;
- f) monitor the attitude and behaviour of drivers when driving a vehicle; and
- g) provide comfortable resting facilities for workers.

## 6.2 Vehicle Management

The employer shall provide a vehicle management programme designed to ensure vehicles are constantly in good condition and safe on the road. In providing such a management programme, matters but not limited to the following, shall be taken into consideration:

- a) daily checks;
- b) vehicle fault recording and reporting;
- c) safety, maintenance and inspection plans;
- d) safety inspection, maintenance and repair facilities;
- e) maintenance record;
- f) training and education for maintenance and safety inspection;
- g) vehicle licence; and
- h) vehicle cleanliness.

### 6.2.1 Daily checks

The employer shall have a procedure for drivers to perform checking of each vehicle daily to identify if any part(s) of the vehicle is/are faulty, and take urgent measures to address safety-related faults. Performing daily checks shall:

- a) ensure each driver is responsible to carry out a pre-trip inspection of the vehicle to be driven;
- b) ensure that the person carrying out the inspection is able to certify the vehicle as road-worthy;
- c) set out minimum inspection requirements;
- d) ensure each driver is responsible to carry out a post-trip inspection at the end of every work session, hereby such inspections shall, as in the case of the pre-trip inspection, cover every part of the vehicle.

Minimum checks shall include:

- a) vehicle documentation;
- b) engine system;
- c) brake system;
- d) engine at start-up;
- e) interior neatness (especially buses);
- f) tyre change kit (emergency); and
- g) first aid and fire extinguisher.

An example of the vehicle daily check form is as per **Appendix D**.

### 6.2.2 Vehicle fault recording and reporting

Vehicle fault recording is the process of recording and reporting any fault(s) in the vehicle as soon as possible upon detection, or after every repair. The employer shall brief a newly employed driver about the condition of the vehicle to be driven by him. Every fault recording and reporting shall ensure:

- a) any faults found in the daily check are recorded in the vehicle fault report, which is kept in the vehicle;
- b) faults found during or after the journey are recorded in the same manner; and
- c) all reports and records (a) and (b) shall be referred to the management for the purposes of vehicle repair and maintenance.

#### **6.2.3 Safety maintenance and inspection plan**

A safety maintenance and inspection plan shall ensure:

- a) periodical comprehensive maintenance by a specified or qualified party or other party proposed by the vehicle manufacturer;
- b) a maintenance report or mechanic's report filed as record; and
- c) any vehicle found by the authorities to have a critical problem shall be taken off the road immediately.

#### **6.2.4 Safety inspection, maintenance and repair facilities**

The employer shall ensure that the facilities and equipment for repair, maintenance and safety inspection of a vehicle are suited for the processes involved.

#### **6.2.5 Maintenance record**

The employer shall ensure that all safety inspection, maintenance and repair of vehicles are recorded and kept properly. The details of the record should include:

- a) vehicle daily checks;
- b) detected on-the-road faults;
- c) vehicle maintenance;
- d) vehicle repairs undertaken;
- e) vehicle inspection by authorities;
- f) review on maintenance processes; and
- g) facilities and equipment used.

An example of the maintenance record is as per **Appendix E**.

#### **6.2.6 Training and education for maintenance and safety inspection**

The worker carrying out the repair, maintenance and safety inspection shall be given sufficient training. This is to ensure that he is skilled in the fitting of vehicle equipment, repair, maintenance and safety inspection of the vehicles.

#### **6.2.7 Vehicle Licence**

The driver in charge of the vehicle shall keep the vehicle's licence, vehicle and loading capacity documentations in a special file. The said file shall be presented to the authorities for inspection, as and when required.

#### **6.2.8 Vehicle Cleanliness**

Vehicle cleanliness especially interior cleanliness shall be emphasised. Drivers, especially those operating public service vehicles and tourism vehicles, shall ensure the interior of the vehicle is always kept clean and tidy by checking on a daily basis - the seats, curtains, trash bin, cobwebs, dust and others.

### **6.3 Journey and Risk Management**

Contributory factors to road accidents, apart from human and vehicle factors, can be attributed to roads and the overall environment. It is important to emphasise environmental factors such as roads, topographical conditions and road categorisation throughout the entire route. Employers have to assess the risk management of the entire route to ensure that the driver has a safe journey.

### 6.3.1 Hazard identification, risk assessment and risk control (HIRARC)

The employer shall identify all the hazards relating to road transport activities, and also workshop and depot activities. Based on the identification of the said hazard, a risk assessment of the hazards shall be carried out so that risk control may be formulated to prevent the occurrence of any accident resulting from any activity carried out. The relevant activities at the place of work include:

- a) dispatch of goods from factory to customer, vehicular journey, etc;
- b) journey from one area to another via highway, federal road, etc.; for example, express buses and shuttle buses;
- c) dispatch of goods from factory to buyer, etc;
- d) disassembly, assembly, repair and maintenance of vehicles at workshop;
- e) use of equipment and machinery at the time of disassembly, assembly, repair and maintenance of vehicles;
- f) loading and unloading activities of goods and baggage;
- g) management of customers/public in relevant areas such as terminal, depot and workshop.

Hazards associated with a place of work are as below but not limited to:

- a) driving while drowsy and exhausted;
- b) dangerous driving;
- c) emergency exit door not functioning;
- d) not wearing seat belt;
- e) loss of control of vehicle due to brake failure;
- f) driver falling asleep while driving due to exhaustion and fatigue;
- g) slipping of vehicle due to slippery road;
- h) worker slipping on workshop floor because of slippery floor surface caused by spilt oil or grease;
- i) noise resulting from repair of vehicle;
- j) fire caused by inflammable gas during related activity such as welding;
- k) struck by falling goods while loading and unloading from vehicle; etc.

Next, risk assessment shall be carried out on each hazardous activity identified. Human factor, vehicle, road and environment associated with the said activity shall be taken into account. Assessment of associated risks shall be done and take into consideration several factors but not limited to:

- a) location and distance of destination;
- b) category of road used;
- c) high risk sections of the road caused by earth surface factor, etc;
- d) type of vehicle to be used;
- e) warning signage put up by relevant enforcement authority;
- f) journey schedule;
- g) body fitness and training undergone by driver;
- h) procedure and safe working instructions provided by employer for compliance;
- i) arrangement of workshop or depot;
- j) tools and hoisting machine to elevate vehicle for the purposes of dismantling, fitting, repairing and maintenance of vehicle;
- k) use of chemical substances which are dangerous to health; and
- l) activities associated with inflammable gas and use of mobile electrical apparatus such as for welding activity.

Risk control measures shall be provided in order to manage the said risks depending on the risk assessments done. Examples of risk control measures are the following but not limited to:

- a) training;
- b) health examination;
- c) develop safe working procedures for workshop activities and vehicle driving;
- d) arrangement of workshop inspection;
- e) daily vehicle check and periodic vehicle maintenance;
- f) checking of apparatus such as seat belts, fire extinguishers, emergency exits, emergency light reflectors;
- g) installation of warning system

The employer shall ensure HIRARC is conducted by skilled workers/personnel in conducting HIRARC. HIRARC shall be documented and reviewed if there are changes in the activities being carried out, or if there is any new hazard or danger arising out of such activity. An example of the HIRARC record is as per **Appendix F**.

#### **6.3.2 Identification of hazard and route risks**

The potential danger and risks along the route shall be identified so that appropriate action and extra care could be taken when travelling the route. The following shall be given due consideration:

- a) sensitivity to weather changes and high risk locations caused by weather changes;
- b) identification of high risk areas caused by other factors (road condition, animal crossing, topography, etc).
- c) warning signage at route;
- d) festive seasons when volume of traffic on the road is extremely high;
- e) hazards of night travel.

#### **6.3.3 Trip schedule**

The employer shall prepare a trip schedule to enable drivers to have sufficient time for breaks to ensure safe journeys. The drawing up of a trip schedule shall take into consideration the following:

- a) time and distance of journey;
- b) traffic;
- c) road and topographical conditions;
- d) time of journey (morning, evening or night);
- e) pressure and fatigue while driving; and
- f) condition of the vehicle driven.

#### **6.3.4 Rest and recreation**

For long distance journeys, rest and recreation are important for the driver. The driver needs to have sufficient rest and able to maintain his fitness level during driving. It also implies that the driver can do a cursory vehicle check such as of the tyres and other parts of the vehicle.

#### **6.3.5 Monitoring Trips**

Monitoring trips by drivers during an assignment is another key responsibility of employers. The logbook is a simple method of monitoring the trip. The following details in the logbook should include, but not limited to:

- a) name of driver;
- b) time of departure;
- c) time of arrival at destination;
- d) rest hours;
- e) record of distance (odometer reading), route, etc; and
- f) change of driver.

The data shall be kept, maintained and managed by the employer for specific purposes; for example, to monitor the driver's performance. The employer is encouraged to use the latest data recording system to monitor trips other than a logbook such as Global Positioning System (GPS).

#### **6.3.6 Passenger, goods and baggage management**

The employer shall have a proper passenger, goods and baggage management system as it can minimise the risk of accidents or minimise the impact in the event of an accident. Therefore, the following shall be strictly provided for or improved upon:

- a) a systematic terminal equipped with proper facilities for embarking and disembarking passengers, goods and baggage;
- b) bus stops considered safe for the embarking/disembarking of passengers and for their rest and recreation;
- c) customer feedback system for receiving complaints or appreciation of services, etc;
- d) baggage regulations (bus interior and baggage compartment) – may refer to existing authority regulations;

- e) passenger / goods shall comply with conditions stated in the permit/licence;
- f) a notice showing the DO's and DON'Ts when using a public service vehicle that is posted inside the bus, at the bus stop and bus terminal. It shall be clear, durable and exhibited at a conspicuous place visible to passengers;
- g) a clear signage or notice placed at suitable places within the vehicle, at the vehicle stops, terminals, warehouses, and other appropriate locations stating the appropriate actions to be taken in an emergency.

#### **6.3.7 Emergency response plan**

An emergency response plan that is quick and effective is able to minimise the impact of an accident that results in death or serious injury besides saving life and property. As such, it shall be given due priority by the employer. Therefore, the following shall be made available:

- a) emergency response procedure as outlined in paragraph 2.8;
- b) training on first-aid and basic fire-fighting plus first-aid kit and treatment handling shall be given to driver and tourist guide (for tourism bus);
- c) first aid kit shall be made available, in sufficient quantity, and in a good condition at all times inside every vehicle and other locations such as terminal, workshop and warehouse;
- d) active and usable fire extinguishers kept in an easily visible and retrievable place in vehicles, terminals and workshops;
- e) emergency equipment such as torches and hazard indicators such as emergency cones and triangular signage placed in the vehicle;
- f) usable spare tyres and tyre-changing equipment are in the vehicle; and
- g) written procedure for reporting incidents or accidents for staff especially drivers (such as calling the relevant authorities, the officer in charge) in every bus and terminal. It shall be easily comprehensible, clear and always updated.

#### **6.3.8 Reports and accident investigation**

The employer shall forward any accident reports arising out of occupational activities to the nearest Department of Occupational Safety and Health and related authorities, and keep records for further investigation and improvement actions. Drivers shall be guided as to the steps to make accurate reports so that the reports have useful details for reference. The following are the measures that need to be taken:

- a) each accidental incident or a near-miss accident shall be reported to the management;
- b) the management shall carry out an investigation to gather essential information such as the source of the accident. Such information procured shall subsequently be handed over to the relevant authorities for further action;
- c) the notification and reporting of accidents shall comply with the Occupational Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations 2004;
- d) corrective and preventive actions shall be taken to avoid the recurrence of such incidents. The officer taking these actions shall be given training in investigative work and in making reports on safety and health;
- e) all accident reports shall be channelled to and discussed by the safety and health committee for assessment with a view / the intention for continuous improvement.

#### **6.3.9 Complaint management**

The employer shall give serious considerations to reports from clients, the public or others. All complaints shall be investigated and corrective actions shall be taken as soon as possible. All reports and follow-up actions shall be recorded.

## **7.0 WAREHOUSING**

Warehousing and storage cover a wide range of activities that can result in various hazards and risks. For effective health and safety management at the work place, the employer needs to study the risks in the workplace pertaining to warehousing and storage, and put in place reasonable health and safety measures to control the risk and hazard. By doing so, the employer will ensure not only the safety of the employees but also the members of the public. Thus, the role of the employers to protect the premises, goods, equipment and, inevitably the company's reputation is crucial.

### **7.1 Warehouse Environment**

It is important to provide a safe and healthy environment for the employees and visitors, along with adequate facilities and amenities. This should be the starting point for good health and safety management within the warehouse.

#### **7.1.1 Design and Layout**

Warehouses should be designed with a layout that allows a safe movement of goods, materials and people. A good design and layout can help reduce accidents, including those involving vehicles and injuries, such as slipping and tripping. The movement of goods and materials involves the use of a wide range of vehicles and accounts for a large proportion of accidents in warehouses. It is important to have a safe system of traffic management. This should include methods and procedures for arrival, reception, unloading, loading and movement of vehicles within the premises. People and vehicles should be segregated as far as it is reasonably practical.

When thinking about the design and layout, consider the following areas:

- storage areas, aisles and gangways;
- pedestrian traffic routes;
- staircases and ramps; and
- emergency escape routes.

#### **Floors and traffic routes**

Floors and traffic routes should be constructed and designed to withstand the use to which they may be subjected to, such as physical damage from lift trucks and wheeled equipment or corrosion from chemical substances. Floors should also be capable of bearing the general overall load to which they may be subjected to and any point loading from stock, either with or without pallet racking. Traffic routes should have adequate strength and stability, taking into account the quantum of traffic passing over them. Floors should not be overloaded.

Deep holes into which people may fall should be securely fenced or covered. Storage areas, aisles and gangways should be clearly marked out on the floor. Gangways should be wide enough to ensure that mechanical handling equipment can be easily manoeuvred. The surfaces of floors and traffic routes should be free from any hole, slope, or uneven or slippery surface, which is likely to cause:

- a person to slip, trip or fall;
- a person to drop or lose control of anything being lifted or carried; and
- instability or loss of control of vehicles and/or their loads.

Slopes should not be steeper than necessary. Moderate and steep slopes, and ramps used by people with disabilities, should be provided with a secure handrail where necessary. Floors and traffic routes play an important part in managing the risk of slipping and tripping. Occasionally, there may be a temporary obstruction which is unavoidable and is likely to be a hazard; therefore, it is advisable to prevent access or take steps to warn people or drivers of the obstruction. Where furniture or equipment is being moved within a workplace, it should, if possible, be moved in a single operation and should not be left in a place where it is likely to be a hazard. Vehicles should not be parked where they are likely to be a hazard.

### 7.1.2 Fire Safety

A fire occurring in a warehouse can have serious implications for life and property. Therefore, employees should take steps to avoid fires and to ensure people's safety if a fire does start. The local fire and rescue authority will enforce fire safety in most premises, including warehouses. Employees are required to undertake a fire risk assessment to help ensure that fire safety procedures, fire prevention measures and fire precautions (plans, systems and equipment) are all in place. The five steps of a fire risk assessment are:

- **Step 1 identify fire hazards** (sources of ignition, fuel and oxygen);
- **Step 2 identify people at risk;**
- **Step 3 evaluate, remove, reduce and protect from risk** (evaluate, remove or reduce fire hazards and evaluate, remove or reduce the risks to people);
- **Step 4 record, plan, inform, instruct and train** (record significant findings and action taken, prepare an emergency plan, inform and instruct relevant people, and provide fire safety training for your staff); and
- **Step 5 review and revise your assessment as necessary.**

### 7.1.3 General Housekeeping

Keep work areas, offices, rest rooms, lounges, storage areas, aisles and gangways and washrooms clean and tidy at all times. Poor housekeeping can significantly increase the risk of other accidents such as slipping and tripping.

### 7.1.4 Ventilation

Most warehouses where loading/unloading doors are open during the working day will not usually require any special ventilation arrangements. However, specific ventilation requirements may be necessary for the storage of some materials or where equipment such as oil- or gas-fired heaters and lift trucks with internal combustion engines are used inside the warehouse.

### 7.1.5 Lighting

Good lighting, whether natural or artificial, is vital in promoting health and safety at work. It also has operational benefits, for example making labels easier to read. In all working and access areas, sufficient lighting should be provided to enable work activities to be carried out safely, and workers are shielded from excessive heat or glare. The level and type of lighting depend on:

- the type of work being carried out; and
- the hazards associated with it.

In warehouses, there can be considerable obstruction to the lighting due to racking. It is important to arrange lighting to avoid shadows. Lighting should be sufficient to enable people to move from one place to another safely. Stairs should have good lighting. In cases where the failure of artificial lighting might expose workers to danger, emergency lighting which triggers off automatically upon a breakdown of the normal lighting system should be provided.

## 7.2 Vehicles in and around the warehouse

Vehicle movement in the workplace requires careful and constant management in order to control and reduce the likelihood of accidents. Simple steps can often prove effective because many of the problems that result in accidents are very straightforward. Employers need to make sure that the site itself, the vehicles (including mobile equipment) being used, and the people working with and around this equipment, are all managed properly in order to control the risks of transport efficiently.

### 7.2.1 Managing deliveries and visitors

Planning and communication are at the heart of transport safety. People associated with vehicles are often visiting warehouses for a relatively short time and are often employed by other companies (like suppliers, hauliers or agencies), or can be clients or their employees. An employer should make sure that employees or members of the public are safe in the workplace. Employers are also responsible for making sure that their



employees' safety is being protected on other premises.

Vehicle loading and unloading activities should form part of the risk assessment undertaken by both the employer in control of the premises and the employer of any visiting drivers. All employers involved in the delivery and collection of goods, whether they own and control the site, provide employees to manage the site or have employees visiting the site, should exchange any relevant information on health and safety that relates to these activities. All visitors should be carefully monitored while on the premises. They should be given clear instructions on site rules which should include the use of PPE where necessary. All visitors should be given basic guidance on what steps to take in the occurrence of an unexpected incident or accident, with the help of a responsible person who monitor them.

### **7.2.2 Pedestrian Safety**

Every workplace should be organised so that pedestrians and vehicles can move around safely. Workplace traffic routes should be suitable for those in the premises and vehicles. Where vehicles and pedestrians use the same traffic route, there should be adequate separation between them.

### **7.2.3 Ensuring pedestrians safety from operating vehicles**

The following safety measures should be in place where pedestrians are within or adjacent to vehicles:

- prohibit members of the public and non-related personnel to the specific operations such as office staff, from being in the areas when vehicles are moving or being loaded/unloaded;
- provide sufficient warning signs that clearly show the vehicles in operation within the area;
- instruct all employees and visiting drivers to keep away from vehicles that are moving or being loaded by lift trucks, cranes, etc; and
- provide employees with adequate PPE for their work, such as safety footwear and high-visibility clothing.

### **7.2.4 Traffic Routes**

When designing traffic routes, these elements should be considered:

- vehicle routes should be wide enough and reliable for the largest vehicle to use;
- the need for vehicles to reverse should be minimised as far as possible, for example using one-way systems and drive-through loading areas;
- sharp bends and blind corners should be avoided; if they are unavoidable, effective warning signs and suitably placed mirrors may help to reduce danger;
- traffic routes should be made of suitable materials and should be constructed soundly enough to safely bear the loads that will pass over them;
- road surfaces should be properly maintained and potholes should not be allowed to develop; and
- any slopes should not be so steep that they pose a risk to the safety of work that takes place on them, including the stability of vehicles or their loads.

### **7.2.5 Managing Transport**

Managing transport at the workplace that comes with its specific risk and hazard is another key aspect of health and safety at the work place. To control the risks of workplace transport effectively, it is important to address issues such as pedestrian segregation and speed controls, and put in place active monitoring by supervisors and managers to ensure that employees and visiting employees are complying with these safety measures. This should include ways to deal with individuals who may not be complying with standards as well as identify the reasons behind the non-compliance. For visiting employees, it is recommended to address non-compliance with the individual and discuss the issue with their manager to address the underlying causes.

### 7.2.6 Traffic Sign

Provide adequate and clear road and direction signs, which gives indication of right of way and the route that vehicles should use.



**Figure 19: Examples of traffic signs for clear instructions**

### 7.2.7 Reversing Vehicles

Reversing vehicles cause a significant number of fatal transport accidents each year where people are struck by vehicles in the workplace.

To reduce the risks from reversing vehicles, the following elements should be considered:

- remove the need to reverse altogether. Set up one-way systems or drive through loading/unloading positions;
- where this is not possible, designated reversing areas where pedestrians are prohibited;
- in any case, separating pedestrians from vehicles is essential if accidents are to be avoided (e.g. by setting out clear and safe pedestrian walkways); and
- if the site is small, the size of visiting vehicles may need to be restricted to allow safe access and minimise the need for reversing.

If it is not possible to change the site layout, other control measures will then be necessary.

### 7.2.8 Load Safety

Employers should ensure that:

- No vehicle should be loaded beyond its rated capacity or beyond the legal limit of gross weight for that vehicle.
- Before loading is started, check the vehicle floor to ensure it is clear of loose objects, in good condition and safe to load.
- Loads should be properly secured or arranged so that they are safe for both transportation and unloading, e.g. so that they do not slide forward in the event of sudden braking, or move sideways when cornering.
- Carry out loading/unloading to maintain, as far as possible, a uniform distribution of the load.
- Have in place a system to check for and to safely deal with any loads that may have shifted during transit.
- Before loosening any load-bearing ropes or straps etc, check the vehicle and load to ensure that materials or goods do not fall.
- Loading and unloading vehicles from one side using lift trucks can result in pallets on the opposite side being disturbed that cause a pallet(s) to fall. The opposite curtain or side should be secure during loading/unloading.
- The driver is responsible for ensuring the load is secure and should give instructions on positioning of loads to lift truck drivers.

- Where the driver has not been involved in loading and the vehicle/trailer body is secured, the driver should be given a written assurance that the loading and security have been carried out in a proper manner (e.g. a signed statement on the loading sheet).
- Loading should not take place on significant gradients.

#### 7.2.9 Dock Levellers



**Figure 20: Dock Levellers**

Dock levellers are devices used to bridge the gap between the loading dock and vehicle trailer. The main hazards associated with dock levellers are:

- trapping of feet or toes between the descending platform and loading dock;
- overturning of mechanical handling devices;
- tripping or falling of people, goods or materials; and
- trapping of people underneath the dock leveller.

The following safeguards should be used:

- When a dock leveller integral to a loading dock is not in use, the platform should be returned to a horizontal position flush with the loading dock as soon as loading/unloading is completed. A mechanism fitted to the dock leveller that automatically returns the platform to a horizontal position after use will give increased protection against the risks caused by the platform being left inadvertently raised or depressed.
- Toe guards should be provided, e.g. fencing at the sides of the leveller that prevents feet or toes from being caught under the platform as it descends.
- Provide skirts, plates or other suitable devices to enclose the trapping hazards below the platform.
- Provide a mechanism that prevents the platform from falling in the event of an emergency, e.g. a drive away.
- Provide manually operated scotches or other equally effective means to enable the dock leveller to be mechanically locked in a raised position when maintenance or repair work is necessary.

Defective safety features, twisted, cracked or misaligned platforms or other defects with dock levellers can cause serious accidents. Employees should have a planned routine maintenance system, as well as an effective system to report defects and carry out repair work.

#### 7.2.10 Tail Lifts

Tail lifts are lifting platforms fitted to a vehicle. The main hazards are:

- people falling from the platform (e.g. while manoeuvring loads from the vehicle onto the tail lift);
- people being struck by loads falling from the platform (e.g. wheeled delivery cages);
- trapping feet or toes between the moving platform and the ground or stationary parts of the vehicle;
- trapping fingers or parts of the body in moving mechanisms; and
- trapping people under the platform.

Tail lift safeguards include:

- 'hold-to-run' controls, which return automatically to 'off' when released. All controls should be designed to prevent accidental operation, clearly marked to indicate the direction of movement, and positioned so that the operator has a clear view of the platform throughout its travel;
- elimination of finger and toe traps. Where minimum safety gaps cannot be provided (e.g. on some types of cantilever lift), tripping devices are an alternative;
- providing grab rails and guard rails where there is risk of a fall from height;
- the safe working load should be clearly marked and should never exceed;
- proper maintenance and lubrication should be carried out in accordance with the manufacturer's instructions;
- vehicles should never be driven with a loaded tail lift platform; and
- the platform should be checked to ensure that it is securely stowed before travelling.

### **7.3 Working on High Platforms**

Falls are the most common cause of fatal injuries in the workplace. Many employees working within the storage and warehousing industry suffer serious injuries such as broken bones or fractured skull due to falls from height while working. Many of these injuries could have been prevented if sensible measures had been taken. Working on high platforms during a routine task or a one-off job above or below ground level is dangerous as the personnel could fall and injure themselves. The risks are as follows:

- people can fall from work equipment (e.g. while using stepladders);
- people can fall from an unprotected edge, or through an opening or fragile surface (e.g. while transferring stock onto a mezzanine floor);
- people can fall from ground level into an opening in the floor or hole in the ground.

#### **7.3.1 Falling object**

Employers are required to take steps to prevent people from being injured caused by falling objects. Some common causes of items falling include:

- goods disturbed from a congested shelf;
- goods pushed through the back of a racking location due to careless positioning of stock or excessive stock levels;
- goods falling from pallets during handling on a fork-lift truck; and
- materials falling from a poorly loaded vehicle.

If there are areas or specific activities in the warehouse that pose a risk of someone being struck by materials or an object, ensure that the area is clearly indicated and that unauthorised people are unable to enter it.

#### **7.3.2 Planning and supervision**

Any work at a height, including maintenance work undertaken by a contractor, must be properly planned, appropriately supervised and carried out in a safe way as much as possible. This includes planning for emergencies and rescue where necessary. People involved in planning, supervising and organising work at a height must be competent.

#### **7.3.3 Inspection and maintenance of equipment for working at a height**

The frequency of inspections should be determined by risk assessment (the frequency may be determined by a number of factors, such as the extent of use and the environment). Inspections should also be carried out after an incident where the quality of the equipment may have been compromised. Employers should ensure that the person handling the equipment undertakes pre-use checks for any defects that might adversely affect its strength or stability. Working platforms must be inspected:

- before being used for the first time;

- periodically, by a competent person; and
- after any event affecting its strength and stability.

During the periodic inspection of ladders and stepladders, these are to be looked at:

- general condition for soundness;
- legs, rails, platforms and steps where present as part of the design, to ensure that they are straight and undamaged;
- joints and hinges to ensure they are undamaged;
- hand rails, where provided, to ensure they are undamaged;
- wheels and brakes, where present as part of the design, to ensure they are in good condition;
- look for dents, distortions or sharp edges;
- wood is not damaged, cracked or painted, and that no splinters are present;
- footpads are all attached and in good condition;
- stays, where required for stability, are in good condition and can be locked in place; and
- steps/rungs are clean.

Ensure that there is a system for reporting and managing equipment defects. This should effectively prevent the use of defective equipment, i.e. withdrawing defective equipment from use.

#### **7.3.4 Loading and unloading vehicles**

When loading and unloading vehicles, carry out a risk assessment and apply appropriate control measures. Particular points to consider include:

- taking care to ensure that stock or equipment do not fall to avoid injury;
- protecting the edge with an appropriate safety rail and, where unprotected edges exist, use a bold visible line to highlight the edge;
- where edge protection is not reasonably practical, taking measures to exclude people, other than those trained and authorised, where there is a risk of falls from height or falling objects; and
- restricting the working area of the loading bay to staff working legitimately in the area.

Always use the steps provided to get on and off the loading bay. Do not attempt to jump. Do not manually lower cages, etc. down from the bay.

#### **7.3.5 Stepladders and mobile stairs**

Stepladders and mobile stairs ('aircraft steps') have many design variants, and their design features should be considered when determining their suitability for a particular task or work environment. For example, some stepladders have work platforms, hand rails, etc., and are especially suited for use in narrow aisles, where heavier, bulkier mobile steps may be inappropriate.

Mobile steps may be suitable for longer duration tasks at an intermediate-level of picking or replenishment, and maintenance work where there is space and where they do not create additional hazards (such as impeding means of escape from fire), and working at a height is required to prevent overreaching during a manual handling operation. Stepladders may be suitable for short-duration tasks and maintenance work where the use of bulkier equipment would create additional hazards. When using stepladders and mobile steps:

- check them before use and avoid using defective equipment;
- when in use, make sure the rungs are level and it is resting on firm, level ground;
- make sure floor surfaces are clean and not slippery;
- make sure stepladders are used for a short duration and for light work only;
- have enough space to fully open stepladders and use any locking devices provided;
- apply the brakes (where fitted) to any mobile steps;

- do not work off the top two steps unless you have a safe handhold on the steps;
- avoid side-on working from stepladders;
- do not overreach; and
- obtain assistance if appropriate.

### 7.3.6 Ladders

Working on a fixed or movable ladder requires at least three points of contact with the ladder. They are usually inappropriate for collection and retrieval of stock. If you are planning to use a ladder:

- make sure you choose one in good condition, e.g. no rungs are cracked or missing, and the ladder feet are present and in good condition;
- do a pre-use check (including the feet);
- inspect it periodically, and make sure it is properly maintained;
- do not use makeshift or homemade ladders or carry out makeshift repairs to a damaged ladder. Never paint ladders – this may hide defects;
- position it so that the bottom will not slip outwards. Use it at an angle of 75° (1 unit out for every 4 units up – the '1 in 4' rule);
- prevent slipping during use by tying the styles, using an effective anti-slip or stability device, or by footing;
- rest the top against a solid surface;
- rest the foot on a firm, level surface and make sure the rungs are level. Do not place it on material or equipment to gain extra height;
- make sure floor surfaces are clean and not slippery;
- access ladders must extend at least 1 m above the landing places unless there is a suitable handhold to provide equivalent support;
- extending ladders should have an overlap of at least three rungs.

When you are using a ladder:

- always grip the ladder stile when climbing;
- do not work off the top three rungs – these are to provide a handhold;
- do not carry heavy items or long lengths of material up a ladder – use it for light work only;
- carry light tools in a shoulder bag or holster attached to a belt so that you have both hands free to hold the ladder; and
- do not overreach.

### 7.3.7 Racking

Racking must not be used as access equipment unless it is designed for this purpose. Climbing on racking is prohibited (unless it is specifically designed for access) – do not leave working platforms and climb into racking systems.

## 7.4 Storage System

A pallet is a portable platform, with or without super-structure, for the assembly of a quantity of goods to form a unit load for handling and storage by mechanical means. They are widely used for the storage and transit of goods.

### 7.4.1 Pallets

A pallet is a portable platform for the assembly of a quantity of goods to form a unit load for handling and storage by mechanical means. They are widely used for the storage and transit of goods. A reversible pallet is a pallet with similar top and bottom decks, either of which would take the same load. They are not suitable for use with hand-pallet trucks as the small wheels on the forks will cause damage and separation of the bottom deck.

A wing pallet is a flat pallet whose deck (or decks) projects beyond the outer bearers to facilitate the use of lifting slings. It is not suitable for drive-in or drive-through racking. The dimension between the racking beam rails has to match the overall width of the pallet, as the wings are not strong enough to support substantial loads. Flat pallets, post pallets and box pallets are the most common types of pallets used in warehouses. A cage pallet is a special design of pallet that has a superstructure of four attached collapsible vertical sides, usually slotted or mesh. Such pallets are designed to permit stacking by mechanical means. They can be used both for transit of goods and as a display and selection unit for merchandising in retail outlets, i.e. goods can be put on sale without further unpacking and handling.

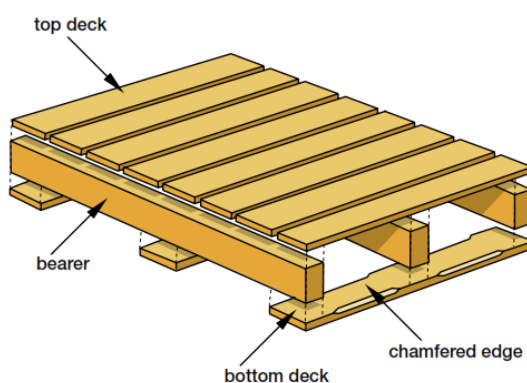
Pallets can be constructed from a number of materials, such as steel, plastic or timber. Flat pallets are usually constructed from timber and with adequate strength. If a pallet racking is used in the warehouse, the type of pallet to use is of key importance. Consider the bending stresses exerted on timber, flat and other pallets from this type of storage.

### Using flat pallets

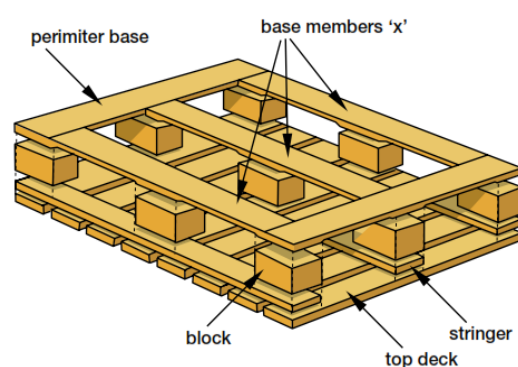
Flat timber pallets form an essential part of many mechanical handling systems in warehouses. Accidents directly attributable to these pallets usually arise from six main sources:

- poor design;
- poor construction;
- the use of a pallet which is unsuitable for a particular load;
- the continued use of a damaged pallet;
- bad handling; or
- the use of a pallet which is unsuitable for a particular racking system.

The majority of pallets are designed for carriage of a particular class or type of goods and to be handled or stored by a particular method. For example, a pallet intended for the carriage of boxed cereals, handled by a lift truck and stored singly in racking, will not usually be suitable for goods such as cans of paint, lifting by bar sling or for a four-high stacking. A pallet designed specifically to carry evenly distributed loads such as boxed cereals, may not be strong enough to carry concentrated loads such as an electric motor of the same weight. Where mixed racking systems are installed within a single warehouse, the use of pallets which requires a different orientation for each racking system, e.g. a four-way entry pallet without base members 'x', is not regarded as suitable. A pallet design that is suitable for all racking systems should be used regardless of orientation.

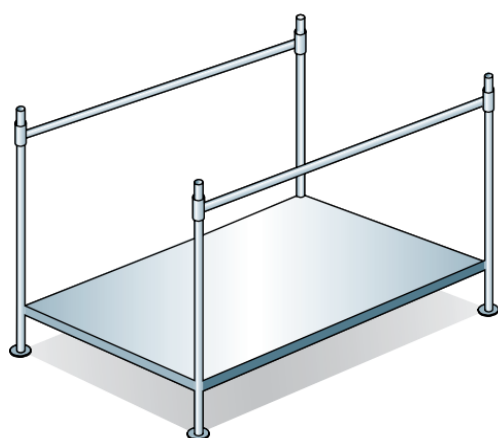


Flat pallet (a) two-way entry non-reversible (topside view). A pallet whose bearers permit the entry of forks from two opposite directions only



Flat pallet (b) four-way entry (underside view). A pallet whose blocks permit forks to enter from all four directions. Some pallets are designed without base members 'x'





Post pallet



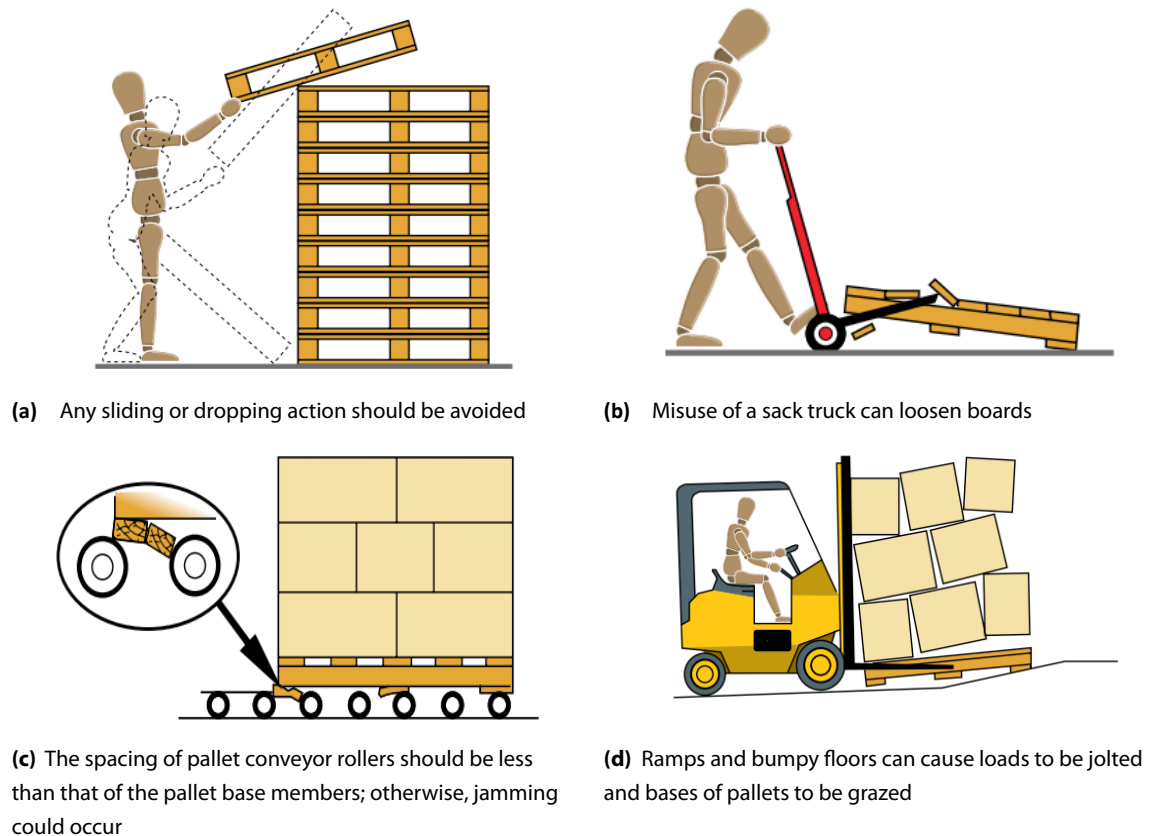
Roller Cage

**Figure 21: Type of pallet and roll cage****Loading pallets**

Pallets should be loaded to an established pattern designed to achieve maximum stability and safety within the rated load. Loads should be applied gradually, and unless the pallet has been specifically designed for point loading, they should, as far as possible, be uniformly distributed over the deck area. As a general guide, the height of the load should not exceed the longest base dimension of the pallet. Shrinking, strapping or wrapping the load usually provides greater security, minimising the possibility of movement of goods; it may be possible, in certain circumstances, to safely transport loads taller than the largest base dimension of the pallet, e.g. palletised loads approximately to the internal height of closed vehicles. This should only be done after you have carefully assessed the stability of the load components, the load configuration and any special features such as wrapping, strapping, etc.

**Stacking palletized loads (block stacking)**

Avoid stacking palletized loads of cartons and packs that are capable of being crushed as the strength and stability of the stack cannot be maintained. Loads that are capable of being stacked directly on top of each other should be positioned on a firm level base. It may be necessary to provide additional packing on top of the lower palletized load, depending on the characteristics of the load and design of the pallet. Generally, such stacks should not be more than a 4:1 ratio between height of stack and the minimum depth/width of pallet. Four loads high might also be considered the maximum height due to the potential problem of crushing the goods on the bottom pallet. In some circumstances, depending on the height, strength and stability of the loads, taller stacks may be built. The maximum permissible height may be up to six loads high, if the pallet itself and the packaging of the stored goods are designed to exceed the four-high strength. Maintain adequate clearance between rows to ensure safe stacking and withdrawal. Check stacks periodically for stability and take corrective actions when necessary.

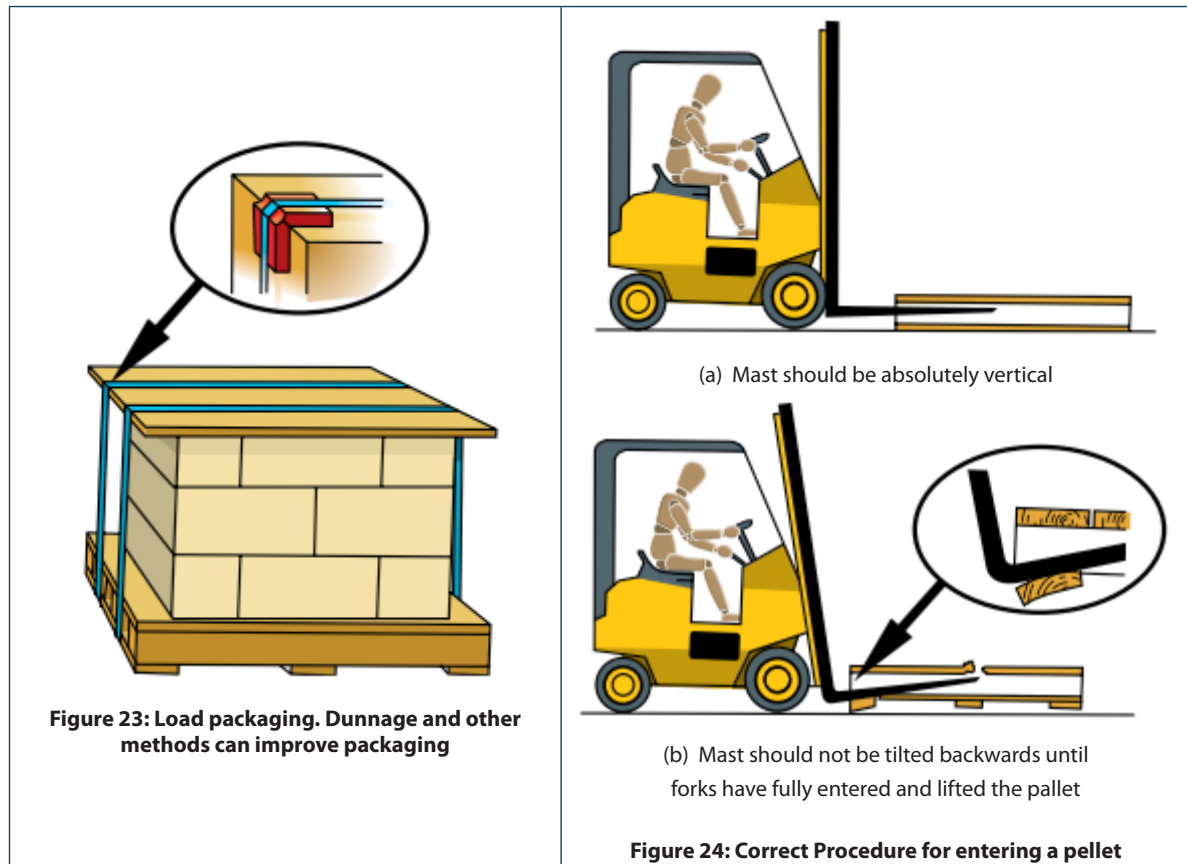


**Figure 22: Common pallet handling faults can damage deck boards**

#### Safe pallet use

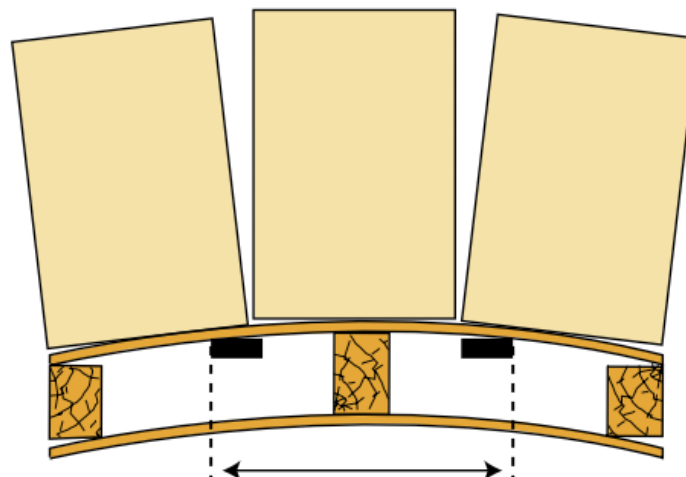
Consider the following for safe use of pallets:

- Employers should have an effective system for pallet inspection. Damaged pallets should be removed from use.
- All pallets should be inspected each time before use to ensure that they are in a safe condition. Withdraw damaged pallets for possible repair or destruction.
- Empty pallets should be handled carefully and not dragged or thrown. They should not be handled by methods likely to loosen deck boards. Wedging the platform of a sack barrow between top and bottom deck boards can cause damage.
- Hand-pallet truck forks of unsuitable length can cause baseboard damage and can be dangerous to workers.
- If hand-pallet trucks are used, take proper care to ensure that the small finger wheels (also known as trail or guide wheels) do not damage the baseboards.
- Chamfered edges to the bottom deck boards will assist entry of the pallet truck fork arms.
- Expendable pallets, i.e. pallets designed for one delivery only should be clearly marked to this effect and are not normally suitable for storing on racking. They should not be reused.
- Take proper care when using strapping to secure loads to pallets as deck boards can be pulled from the bearers.
- To avoid damage to pallets and to lift palletised loads safely, the forks of a handling device should extend into the pallet to at least 3/4 of the pallet depth.
- The forks should not extend beyond the pallet, as protruding forks could:
  - make contact with or lift an adjacent load(s), causing it to overturn or collapse; or
  - find their way underneath a fixed structure (e.g. racking) during lifting, causing overloading of the truck and/or serious damage to the racking structure.



Only authorised, trained and competent person should operate lift trucks. Guide the operators on the proper method of handling pallets and emphasise that:

- the mast should be in the vertical position when entering and leaving the pallet; forks should be level with the pallet boards;
- the pallet should be positioned against the heel of the forks;
- the forks should enter the pallet squarely;
- the forks should be correctly spaced for the pallet load being lifted;
- pallets should not be pulled or pushed along the ground;
- loads should be carefully and gently placed on the stack below;
- pallets should be lowered onto racking beams, and never slid across or along the top surface of such beams.



**Figure 25: Optimum distance between forks should be known in relation to pallet size**

### 7.4.2 Racking Systems

The term 'racking' is used to describe a skeletal framework, of fixed or adjustable design, to support loads generally without the use of shelves. It is usually qualified (i.e. pallet racking, tyre racking, drum racking, etc). Racking systems are widely used in warehouses as there provide considerable space advantages over floor storage, and they provide for easy access and retrieval of goods. There are many different types of racking system. The most common types found in warehouses are described in **Table 10**. **Table 11** shows the terminologies commonly used for racking systems.

**Table 10: Common types of racking systems used in warehouses**

Racking system	Description
Adjustable pallet racking	A system of upright frames connected by horizontal beams to provide pallet storage levels, which can be adjusted vertically. Each pallet storage position can be accessed individually.
Mobile racking	The racking is mounted on movable base frames running on rails; it can be power-operated, manually operated or mechanically assisted.
Cantilever racking	Racking incorporating cantilever arms, either fixed or adjustable.
Live storage racking	A live storage system provides a block of storage in depth, which has a rear or 'loading face' and a front or 'picking face'. Either goods are conveyed from the loading to the picking face by gravity, using an inclined surface or track or by horizontal powered conveyor such that two aisles are necessary to service a block of storage, whatever the depth is. This method of storage ensures that the first-in-first-out system operates and is suitable for pallets, boxes, containers, etc, all of which have specific requirements within a live storage system.
Push-back system	A live storage system provides a block of storage in depth, where picking and loading are both done from the front face of the block. Goods are conveyed to and from the storage position either by gravity using an inclined surface or track or by horizontal powered conveyor such that only one aisle is necessary to service a block of storage. This method of storage ensures that a first-in-last-out system operates and is suitable for pallets only.
Drive-through/drive-in racking	This system provides blocks of static storage where pallets are stored either two or more. By driving into the storage lane, access is gained to pallets supported along their sides on beam rails cantilevered from the frames. Drive-in system: the lift truck drives into a lane and reverses out. Drive-through: similar to drive-in, but the truck may drive through the block from one aisle to another.

**Table 11: Glossary of terms used in adjustable pallet racking systems**

Term	Description
aisle	Space giving access to picking or loading faces
base plate	Fitted to base of upright for floor fixing, or load spreading
bay	A module between upright frames
beam	Horizontal load-carrying member, fitted with a connector at each end for engagement with holes at predetermined increments in the frame upright
beam connector lock	A device for preventing accidental uplift of beams
mobile racking	A number of mobile runs, usually with one aisle
live storage racking	A number of connected bays, each racking provides storage in depth
push-back racking	A number of connected bays, each racking provides storage in depth
drive-through/drive-in	A number of connected bays
frame	Two or more uprights, joined by bracing members
gangway	Space for movement or transport but not giving direct access to picking or loading faces
levels	Number of storage levels in the height
pallet stop	A component positioned at the rear to ensure that a pallet is correctly positioned on the support beams
run	A series of bays connected lengthwise
single-sided run	Single depth of rack, usually accessible from one side only
double-sided run	Two runs built back-to-back
run spacer	A member connecting and spacing two back-to-back runs of racking
wall tie	A fixing between rack and wall to provide spacing and/or stability

**Racking installation****Figure 26: Racking Installation**

The requirements for the safe installation of racking vary according to the types and sizes of the system, and the nature of the building or area for which it is intended. Safe working loads, heights, widths and equipment tolerances should be set by the designers and manufacturers of the total system. The basic principles for safe installation are as follows:

- Racking should only be installed by competent personnel in accordance with the manufacturer's instructions.
- Racking should be erected on sound, level floors, capable of withstanding the point loading at each base plate.
- Where the racking design requires it to be secured to the building, only those building members that have been 'proved', by structural calculations, as able to resist the forces applied, should be used. In such a case, the racking design should be compatible with the building layout.
- Double-sided runs should be connected and spaced using suitable run spacers.
- Where necessary, e.g. where lift trucks or other mechanical handling equipment are used, racking should be securely fixed to the floor.
- Aisles should be wide enough to ensure that mechanical handling equipment can easily be manoeuvred. Widths will depend very much on the type of equipment used, e.g. some require a 90° turn to load and unload, some remain parallel to the aisle and have forks at 90° to the direction of travel.
- Beam connector locks should always securely fix the connectors at the ends of each beam, to prevent accidental uplift of beams, e.g. by lift trucks.
- Racking should have a clear, unambiguous notice securely fixed to it, stating the maximum load together with any necessary specified load configurations.
- The limitations indicated in the maximum load notice should never be exceeded. The weight of each palletised load should be established before a decision is made to store it in the racking. This is particularly important where different products are stored which may vary considerably in weight, or where a new line of product is brought into the warehouse for the first time. In some situations, it may not be necessary to establish the weight of each palletised load if the racking system is designed and installed to meet the storage requirements of the heaviest palletised load in the company's operation. Nevertheless, a system that ensures that all palletised loads intended for storage in racking can be safely stored in accordance with the particular racking design and installation should be adopted.
- Racking should never be altered (e.g. by welding) nor components removed without first consulting the manufacturer. Before changing the position of adjustable components on racking (as supplied), the design limitations of the new configuration should be established and where necessary, the safe working load notice should be amended. Adjusting the position of the first or second beam from the bottom is normally the most critical alteration, which always requires a check on the rated carrying capacity of the rack.
- High visibility colours for key components of the racking, e.g. horizontal beams will assist truck operators to correctly position the forks and avoid damage to the racking.

To increase safety measure, many racking suppliers consider it wise to secure all uprights to the floor. Floor fixing should be such that the anticipated horizontal shear and vertical tensile forces can be safely resisted. Drive-in and drive-through racks should always be designed and floor fixed according to the manufacturer's instructions.



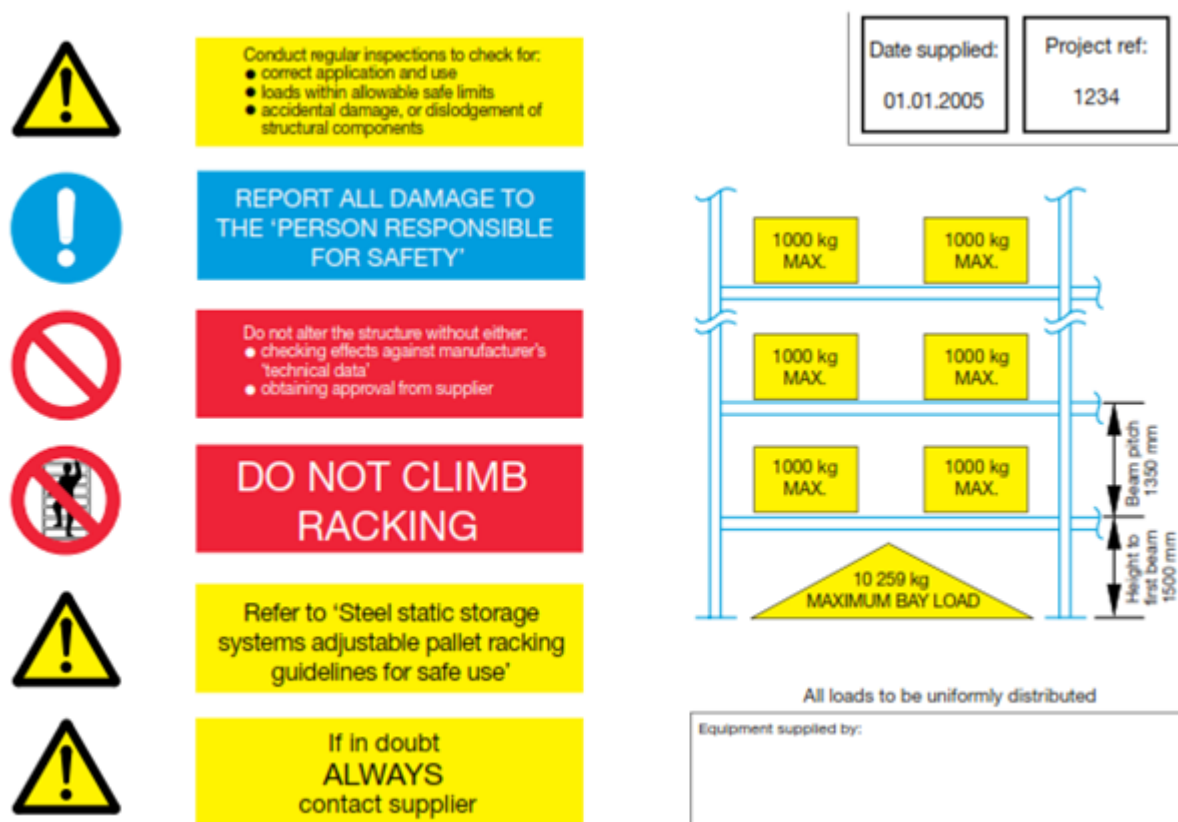


Figure 27: Examples of racking notices and signages

## 7.5 Handling Dangerous Goods

Dangerous goods are articles or substances which are capable of posing a risk to health, safety, property or the environment. They are listed in the Dangerous Goods in the International Air Transport Association (IATA) Dangerous Goods Regulations or classified according to the IATA Dangerous Goods Regulations.

Courier company staff should be aware of the following items:

- Dangerous good items
- Prohibited items

### 7.5.1 Regulations and Enforcement Body

The IATA Dangerous Goods Regulations contain all of the requirements of the Technical Instructions. IATA has included additional requirements, which are more restrictive than Technical Instructions and reflect industry standard practices or operational considerations.

### 7.5.2 Classes of Dangerous Goods

Table 12: Classes of dangerous goods

Class	Example
Class 1: Explosives	Firecrackers, air bag, flammable materials, live/dead bullets, smoke bombs, explosive devices
Class 2 : Gas	Lighter gas, cooking gas, aerosol cans, welding tank, respirator, extinguisher, liquid nitrogen material, all gaseous material
Class 3: Flammable liquids	Kerosene, diesel, paint, adhesives liquid, wood care liquid, ink, dye, alcohol, conditioner liquid, fragrance liquid, colouring materials



Class	Example
Class 4: Flammable Solid	Matches, phosphorus and iron powder
Class 5: Material Oxidative	Lead dioxide, fertilizers (Ammonia Nitrate) Herbicide (Sodium Chloride), pool chemicals material
Class 6: Toxic and Infectious Substances	Herbicide, insecticide, disinfectant material, living or toxic bacteria that cause disease in animals or humans
Class 7: Radioactive Materials	xenon gas, radioactive drugs Medicine
Class 8: Materials Corrosion	battery acid, the chemical compound and all types of amino
Class 9: Miscellaneous	Dried ice, magnetic material, life-saving devices, electric chair, cosmetics/ drug in a small box in the event of gas or flammable liquids, liquid plastic, plastic mould box, white asbestos, machine internal combustion engine, copra

### 7.5.3 Dangerous Goods Packaging

Before any packages or over packing of dangerous goods are offered for air transport, the shipper must comply with the following specific responsibilities:

- i. A shipper must provide necessary information to his employees so they can carry out their responsibilities with regards to the transport of dangerous goods by air
- ii. The shipper must ensure that the articles or substances are not prohibited for transport by air
- iii. The articles or substances must be properly identified, classified, packed, marked, labelled, documented and be in the condition for transport in accordance with these regulations
- iv. Before a consignment of dangerous goods is offered for air transport, all relevant persons involved in its preparation must have received training to enable them to carry out their responsibilities. Where a shipper does not have trained staff, the relevant persons may be interpreted as applying to those employed to act on the shipper's behalf and undertake the shipper's responsibilities in the preparation of the consignment
- v. The dangerous goods are packaged in compliance with all applicable air transport requirements including :
  - a. Inner packaging and the maximum quantity per package limits
  - b. Appropriate types of packaging according to the packaging instructions
  - c. Other applicable requirements indicated in the packing instructions including :
    - Single packaging may be forbidden
    - Only inner and outer packaging indicated in the packaging instructions are permitted
    - Inner packaging may need to be packed in intermediate packaging
    - Certain dangerous goods must be transported in packaging meeting a higher performance level
  - d. Appropriate closure procedures for inner and outer packaging
  - e. The requirements such as those in the particular packing requirements of the packing instructions
  - f. The absorbent materials requirement and in the packing instructions where applicable
  - g. The pressure differential requirement.

### 7.5.4 Identifying Dangerous Goods

The following methods can be used as a checklist to identify potential hazardous packages:

- i. Inspect all six sides of each package for dangerous goods labels or description of possible dangerous goods
- ii. If you hear a sloshing sound, question the shipper to find out if shipment contains dangerous goods
- iii. Frosting on a package may indicate dry ice

- iv. A stain on the package may indicate contents are hazardous or leaking
- v. Heat may indicate thermal reaction of the package contents
- vi. Unusual odours may indicate the presence of chemicals or another type of dangerous goods
- vii. The sound of glass bottles may indicate the presence of hazardous material and poor packaging

#### **7.5.5 Using our senses to detect dangerous goods**

- a. Touch - To detect hot or cold temperatures
- b. Sight - Look before you touch. Stains and damages are problem indicators
- c. Hearing - Listen for liquid sounds, hissing sounds or container that moves inside the packages
- d. Smell - Odours indicate that potential problems may exist

## 8.0 TRAINING

### 8.1 Training Guide

Employers need to identify relevant training programmes that are required by employees. The training needs are subjected to the following:

- Employees working scopes
- Legal requirement
- Client requirement
- Hazards that arise from the activity of work exposed to employees.

The employer should ensure that identify all necessity training programmes based on Necessity Training Analysis carried out on the staff involved. Some training can be conducted in-house, but certain trainings should only be conducted by competent/certified training providers. Related training information is recorded and kept by the employer as reference purposes accordance to required retention period. Among the records that should be kept are:

- Necessity Training Analysis
- The course content and training schedule
- Copy of attendance list / certificate
- Evaluation records of the course
- Training manual/training materials
- Other records that are recorded

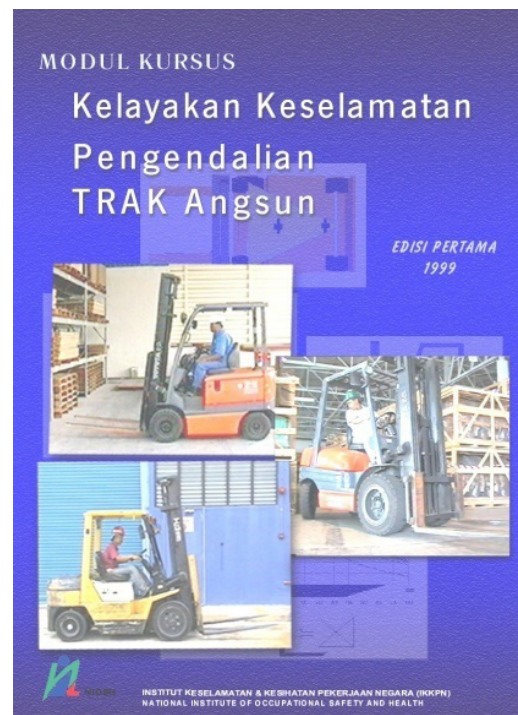


Figure 28: Example of training manual

### 8.2 Material Handling Equipment Training

Employers should identify the training required by employees that operate equipment and machinery for material handling jobs. All employees involved are required to attend related training, conducted by competent training providers. Refresher training courses should be carried out at specific intervals (maximum 3 years).

Minimum elements for material handling equipment for training programmes are as follows:

- Safety and Health at the workplace
- Legal requirements
- Materials Handling Equipment Components
- Materials Handling Equipment Inspection
- Safe operation of Material handling equipment
  - o Load handling, stabilization and arrangement
  - o Steering control
  - o Parking
  - o General operation

### 8.3 Ergonomics and Manual Handling

Courier operators are exposed to various activities of manual handling. Manual handling training together with other manual handling control measures can assist employers and employees to understand the problems, consequences and the ways to manage the issues of ergonomics. Manual handling operators should attend ergonomics and manual handling programmes. Refresher training should be conducted from time to time. Minimum elements for training programmes are as follows:

- Introduction to ergonomics and manual handling
- Health related problems related to ergonomics and manual handling issues
- Identification of ergonomics related hazards
- Manual handling control measures (Engineering, administrative, PPE)
- Manual handling of body mechanics
- Body stretching/strengthening techniques

Advanced training for managers, safety committee members, supervisors and engineers should be conducted where the focus is more on the engineering and organisational approach to ergonomics hazards management.

### 8.4 Road Safety Training

Road safety or defensive driving/riding training programme should be conducted to ALL operators who operate any types of vehicle. Operators that operating different types of vehicle should be attending different types of programmes in accordance with the types of vehicle operated. The programme should be conducted by competent training providers. Refresher training should be carried out at specific intervals as identified by the organisation. The programme should cover, at minimum, the following elements:

- i. Requirements of the Malaysian road transport acts and its regulations
- ii. Vehicle's components and system familiarisation
- iii. Vehicle's components and system inspection
- iv. Defensive riding/driving principles
  - Defensive drivers/riders characteristics and Steering control
  - Pre operation preparations, checklists and procedures
  - Collision avoidance plans and techniques
  - Operating in adverse conditions (poor environment condition, road condition, vehicle condition)
  - Accident management and reporting

### 8.5 General Safety awareness

For in-house safety induction training, the following elements shall be included as listed below and not limited to:

- Workplace General Policy
  - Smoking policy
  - Alcohol and drug
  - Attire / Clothing
  - Mobile phone
- Occupational Health and Safety Law
  - Occupational, Safety and Health Act 1994
  - Factory and Machinery Act 1967
  - Other Standard and Guidelines related to industry
  - Organisation safety and health policy, other policies (an example is environment policy)
  - Organisation safety and health committee
- Employer Responsibilities
- Worker Responsibilities
- Accident and Incident Reporting Procedure
  - Forms to be filled up
  - Person in charge

- Risk Management
  - Introduction of Hazard Identification, Risk Assessment and Risk Control
  - Hierarchy of Control
- Housekeeping
  - Introduction of 5s or other methods
- Slips, Trips and Falls
  - Risk factors
  - Solution and control measures
- Hazardous Substances
  - Chemical substances
  - Other related substances
- Electrical Safety
- Personal Protective Equipment requirement
- Manual Handling
  - Injuries related to manual handling
  - Proper lifting techniques
  - Control measures
- Emergency Procedures
  - Fire hazard
  - Explanation on Fire Extinguisher
  - Evacuation procedure – explanation on evacuation route, assembly point, commander-in-charge during emergency, emergency contact numbers etc.
- First Aid
  - First Aider
  - Location of First Aid Box
- Office Safety
  - Ergonomics
  - Visual Display Unit
  - Lighting
  - Office Machines
- Workplace Bullying
  - Definition
  - What to do about workplace bullying
- Sexual Harassment
  - Definition
  - Dealing with sexual harassment
  - DOSH Guidelines

## 9.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The approach in selecting PPE must encompass an “ensemble” of clothing and equipment items which are easily integrated to provide for an appropriate level of protection and still allows one to carry out courier activities.

Courier companies need to identify hazards and provide appropriate PPE to employees to carry out their work activities. Some examples are listed as follows:

- Feet protection (safety shoes) is to protect the foot from injury; for example, falling or rolling objects, objects pierce through shoe sole, slip, water, chemicals and heat (burns)
- Hands protection (a pair of gloves) is to protect from chemical absorption, cuts, abrasions or erosions, burns, piercing and cuts.
- Respiratory protection is to protect from airborne contaminants such as dust, fumes, gas and smoke. A disposable facemask is used for dusty environments and is not suitable for toxic dusts, vapours or toxic gas.
- Hearing protection is to protect from excessive noise (> 85 dBA) and prevent workers from getting permanent hearing damage.
- Eye protection is to protect from flying dust, splashing chemicals such as liquid, gas / fumes / vapour, and light / glare.
- Head protection (safety helmet) is to protect from falling objects and overhead hazards.

### 9.1 HUB & Warehouse Requirement



PPE that should be provided to the HUB staff such as:

- Gloves
- Safety Shoes
- Body Back Support
- Face mask

**Figure 29: Examples PPE for HUB and Warehouse**

### 9.2 Motorcycle Requirement

PPE that should be provided to the motorbike delivery staff are:

- Helmet with clear visor (Certified by SIRIM)
- Covered Shoes
- Reflective vest
- Long Sleeve/Arm Cover
- Long Pants
- Face mask (optional)

### 9.3 Lorry Drivers & Attendants Requirement

- Safety Shoes
- Reflective vest
- Body Back Support (Load and unload process)
- Face Mask (for dusty condition)

## REFERENCES

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**Appendix A****Safety and Health Policy Statement**

Roslan Courier Sdn. Bhd. is committed to providing a safe and healthy environment for all personnel, contractors and visitors to the company's site.

Management will:

- identify and assess all hazards in the workplace;
- control all significant hazards;
- be proactive in controlling new hazards;
- provide health and safety training and supervision;
- give staff the opportunity to elect health and safety representatives and be involved in the hazard management process; and
- support injured staff to return to work safely and as early as possible.

Employees will:

- actively contribute to hazard identification and management;
- participate in health and safety training;
- adopt safe work practices;
- encourage others to do the same;
- report injuries promptly and accurately; and
- participate in a return-to-work programme if applicable.

(Signed)

.....  
Roslan Mohamad, Managing Director

Date:

## Appendix B

**NECK**

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan) ☐ Left (Kiri) ☐  
☐ Cramp (Kejang) ☐ Pain (sakit) ☐  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**SHOULDERS** Right (Kanan) ☐ Left (Kiri) ☐

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan)  
☐ Cramp (Kejang) ☐ Pain (sakit)  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**UPPER BACK** Right (Kanan) ☐ Left (Kiri) ☐

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan)  
☐ Cramp (Kejang) ☐ Pain (sakit)  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**LOWER BACK** Right (Kanan) ☐ Left (Kiri) ☐

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan)  
☐ Cramp (Kejang) ☐ Pain (sakit)  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**FOREARMS** Right (Kanan) ☐ Left (Kiri) ☐

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan)  
☐ Cramp (Kejang) ☐ Pain (sakit)  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**ELBOWS** Right (Kanan) ☐ Left (Kiri) ☐

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan)  
☐ Cramp (Kejang) ☐ Pain (sakit)  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**WRIST/HANDS** Right (Kanan) ☐ Left (Kiri) ☐

Describe the pain? (Huraikan kesakitan)

☐ Fatigue (letih) ☐ Strain (ketegangan)  
☐ Cramp (Kejang) ☐ Pain (sakit)  
☐ Discomfort (tidak selesa) ☐ Numbness (kebas)

How often the pains occur? (Berapakah rasa sakit?)

☐ Everyday (setiap hari) ☐ 8-30 days (hari)  
☐ 1-7 days (hari) ☐ 30 days (hari)

How long each episode last? (Berapa lama setiap kesakitan berlarutan)

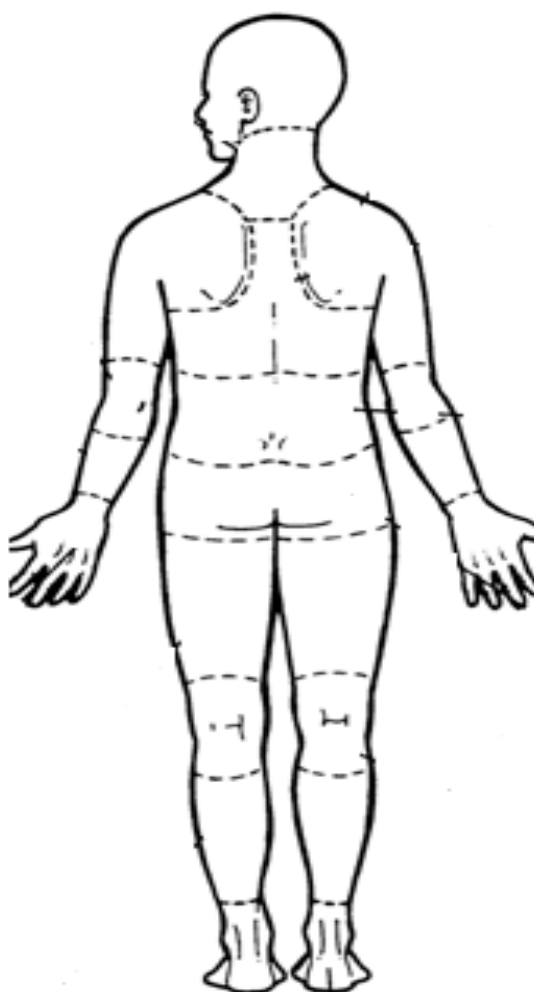
☐ Within hour (beberapa jam)  
☐ A few days (beberapa hari)  
☐ Continuously (berlarutan setiap hari)

**UPPER BODY PART**

### SAMPLE PHYSICAL DISCOMFORT SURVEY

Name: _____	Department: _____	Date: ____/____/____
Supervisor: _____	Job/task Name: _____	

Direction: Please shade body areas that you have discomfort with or feel pain that you think is work related.



Briefly describe the conditions you believe relate to your discomfort: \_\_\_\_\_

**Have you missed any work because of this discomfort?** ☐ No ☐ Yes; If yes, when? \_\_\_\_\_

Did the pain develop ☐ suddenly or ☐ gradually? When did you first notice the pain? \_\_\_\_\_

When you felt the pain, were you doing the job the way that you usually do? ☐ Yes ☐ No If no, what was different? \_\_\_\_\_

What suggestions do you have to address your concerns? \_\_\_\_\_

## Appendix C

## Elements of Drive Management

SUBJECT	CATEGORY		
	M	R	O
<b>Driver Intake procedure</b> <ul style="list-style-type: none"> <li>• Driver's record</li> <li>• Competency/efficiency test</li> <li>• Health Examination</li> </ul>			
<b>Driver Categorisation</b> <ul style="list-style-type: none"> <li>• Driver card system (KEJARA system)</li> <li>• Driver's category (license classification)</li> </ul>			
<b>Training</b> <ul style="list-style-type: none"> <li>• Emergency response</li> <li>• Driving training</li> <li>• Vehicle handling training</li> <li>• Alertness</li> </ul>			
<b>Driving Procedure (Trip)</b> <ul style="list-style-type: none"> <li>• Uniform</li> <li>• Food intake</li> <li>• Forbidden drugs</li> <li>• Inspection of driver's preparedness</li> <li>• Important documents</li> <li>• Wearing of glasses (where relevant)</li> <li>• Early reporting for duty</li> <li>• Entry and reporting for duty</li> <li>• Entry and reporting to supervisor</li> <li>• Pre-trip check and checklist</li> <li>• Vehicle fuel</li> </ul>			
<b>Driving and Working Hours</b> <ul style="list-style-type: none"> <li>• Maximum hours of non-stop driving – 4 hours</li> <li>• Total driving hours per day – 8 hours (maximum)</li> <li>• Total working hours per day – 12 hours (maximum)</li> <li>• Rest hours (30 minutes) every 4 hours</li> <li>• Total number of working days in a week – 6 days</li> <li>• One (1) day of rest after every six (6) days of work.</li> </ul>			
<b>Driver Rotation</b> <ul style="list-style-type: none"> <li>• Drivers working on rotation take over at stipulated destinations</li> </ul>			
<b>Appreciation and warning</b> <ul style="list-style-type: none"> <li>• Appreciation</li> <li>• Career advancement</li> <li>• Incentives</li> <li>• Disciplinary action</li> <li>• Accountability for offences</li> </ul>			
	<b>M =</b> Mandatory <b>R =</b> Recommended <b>O =</b> Optional		

## Appendix D

## Example of Vehicle Check Form

Vehicle Daily Check Form				
			Pre-Duty	Post-Duty
			KM	KM
<b>A</b>	<b>Metre</b> 1. 1 metre reading			
<b>B</b>	<b>Equipment and Documentation</b>		Yes (✓)	No (x)
	1. Jack 2. Tyre dismantler 3. First aid kit 4. Triangular signage 5. Fire extinguisher 6. Spare tyre 7. Permit 8. Trip schedule 9. Road tax			
<b>C</b>	<b>Daily maintenance</b> 1. Water radiator 2. Battery water 3. Tyre pressure 4. Engine treatment oil 5. Brake oil 6. Power-steering oil			
<b>D</b>	<b>Brake System</b> 1. Foot brake 2. Hand brake 3. Front signal light (near side) 4. Front signal light (off-side) 5. Rear signal light (rear side) 6. Rear signal light (off-side) 7. Headlight/dip light 8. Brake light			
<b>E</b>	<b>When Engine is Idling</b>		Yes (✓)	No (x)
	1. Excessive white/black smoke 2. Unusual engine noise 3. Overheating 4. Brakes and vacuum pump in order 5. Wipers in order 6. Washer nozzle in order 7. Hazard lights in order 8. All instruments functioning 9. All front lights of vehicle and brake lights functioning			
<b>F</b>	<b>Pre-Trip Certification by Driver</b> I certify that I have inspected the vehicle as per checklist above before making my FIRST TRIP and acknowledge the above information is true.  <b>Signature:</b> <b>Name:</b> <b>Date:</b> <b>Time:</b>			
<b>G</b>	<b>Post-Trip Certification by Driver</b> I certify that I have inspected the vehicle as per checklist above after making my FIRST TRIP and acknowledge the above information is true.  <b>Signature:</b> <b>Name:</b> <b>Date:</b> <b>Time:</b>			
<b>H</b>	<b>Comments by Manager / Supervisor</b>  <b>Signature:</b> <b>Name:</b> <b>Date:</b> <b>Time:</b>			



Record of Hazard Identification, Risk Assessment and Risk Control (HIRARC)							Date:
Activity	Type of hazard arising	Who may be injured and how?	The current actions being taken	The follow-up actions required	Who took the actions?	When were actions taken?	Status



# HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL (HIRARC)

Company :	Roslan Courier Sdn. Bhd.	Prepared By :	1) Mazlina Binti Hussin 2) Mohd Fadli Bin Shahadan
Process :	Courier	Date:	Apr-13
Department :	Operasi		
Verified by:		Date of revision:	If necessary (if there are any changes)
Date :	Apr-13		

1. Hazard Identification				2. Risk Assessment			3. Risk Control		
No	Activity	Hazard	Consequences / Effects	Current Risk Control	Likelihood	Severity	Risk	Proposed Control Measures	PIC
1	Printing Consign- ment Note	Ergonomic	1. Muscle tension / back pain 2. Carpal Tunnel	Load handling procedures and training	3	1	2	1. Turnover job	HCO
		Dust	Lung problem Eye infection	Exhaust Fan	4	2	8	1. LEV Installation 2. Change carpet with floor that does not trap dust 3. PPE	ADMIN
		Chemical Material	Hard to breathing	Not Available	3	2	6	1. Purchase paper with less bleach 2. Rest and exit from working area every 1.5 hours	PROCUREMENT
		Noise	Hearing Loss	Not Available	2	2	4	1. PPE: Noise resistance	SAFETY & HEALTH
2	Unloading goods from trucks	Inhaling smoke vehicles	1. Headache 2. Nausea 3. Respiratory Disorders 4. Cancer	1. Safety procedures 2. Directional signs	3	2	6	1. Enforcement 2. PPE	SECURITY SAFETY&HEALTH
3	Lifting using forklift	1. Fall items 2. Mechanical errors	1. Foot injuries 2. Accident 3. Damage to customer goods 4. Damage to property	1. Forklift handling proce- dures and training 2. Safety Shoes 3. Competent driver	3	2	6	1. Enforcement 2. "Yearly refreshing training" 3. "Conveyor belt" 4. Forklift maintenance schedule periodically	SECURITY TRAINING UNIT

1. Hazard Identification				2. Risk Assessment			3. Risk Control		
No	Activity	Hazard	Consequences / Effects	Current Risk Control	Likelihood	Severity	Risk	Proposed Control Measures	PIC
4	Manually unloading process.	Heavy load	Musculoskeletal disorder	1. Load handling procedures and training 2. pPE	4	3	12	1. Load Handling using conveyor belt system	MANAGEMENT
		Dust	1. Lung problems 2. Skin allergy	"Exhaust fan"	3	2	6	1. Install LEV 2. PPE	ADMIN
		Sharp Angle	Wound	PPE	4	1	4	Continued awareness	-
		Night Shift	1. "Circadian Rhythm" disturbance	1. Leave once a week	3	2	6	1. Rescheduling work 2. Rotation of work	HCO
		Noise	Hearing Problems	Not Available	2	2	4	1. Building renovation	MANAGEMENT
		Heat	Stress	1. Industrial Fan 2. "Exhaust fan"	3	2	6	1. Building renovation 2. Install a ventilation system	MANAGEMENT & ADMIN
		Dangerous Goods	1. Damage to nervous and immune systems 2. Impairment of reproductive function 3. Cancer 4. Body Injury 4. Difficulty in breathing 5. High compensation costs	1. Handling procedures and exercise handling 2. "Pre-alert" 3. PPE	3	2	6	1. Scanner 2. X-Ray	OPERATION & PROCUREMENT



NOTES