

# **RISK ASSESSMENT GUIDELINES**

## FOREWORD



**The Occupational Safety and Health Act 2005** which came into force on the 1<sup>st</sup> September 2007 provides for every employer to make a suitable and sufficient assessment of any risk to the safety and health to which any employee is exposed whilst he is at work and any risk to the safety and health of any person not in his employment arising out of or in connection with the conduct by him or his undertaking.

In line with the provision of the Act, these guidelines have been prepared with a view to assisting employers to conduct an effective risk assessment at the workplace. Risk assessment is an important tool for the prevention of occupational accidents and diseases and forms an integral part of the occupational safety and health management system. The guidelines provide simple steps which are required to be taken to identify any hazards at the place of work, to determine the severity of any such risks and to implement control measures to eliminate and/or control the risks accordingly. This will lead to a safe and healthy workplace which will not only benefit the workers but also improve productivity and competitiveness of the enterprise.

I would like to acknowledge the contribution of members of the **Advisory Council for Occupational Safety and Health** and the valuable assistance of the **International Labour Organisation** in the preparation of the guidelines.

I rely on all stakeholders to make optimum use of these guidelines in order to ensure that high standards of occupational safety and health prevail at workplaces.

**Hon. Shakeel Mohamed**

*Minister of Labour, Industrial Relations  
and Employment*

## TABLE OF CONTENTS

<i>Description</i>	<i>Page No.</i>
Introduction	1
Terms and definitions	1
Provisions of Law	2
The 5-step approach to Risk Assessment	4
Conclusion	10
Risk Assessment form	11
Example of Risk Assessment	12
References	13

## 1. INTRODUCTION

In 2005, the Occupational Safety and Health Act (OSHA 2005) was enacted to consolidate and widen the scope of legislation on safety, health and welfare of employees at work and it introduced the concept of **Risk Assessment**.

**Risk Assessment**, the process of evaluating the risks to safety and health arising from hazards at work, forms an integral part of the **Occupational Safety and Health Management System**, whereby all hazards are identified and evaluated taking into consideration existing control measures. The exercise should be carried out by competent persons in the field. The ultimate aim is to eliminate or minimise risks at work through tightening of control measures. The risk assessment process may also identify the training needs of employees and contribute towards the building of a preventative safety and health culture. In this endeavour, the commitment of management, employees and competent persons are important in carrying out a proper risk assessment.

**Risk Assessment** is an important tool in the creation of safe working conditions thereby increasing productivity and employees' morale while reducing injury, sick leaves and labour turnover. It also aims at cost reduction as accidents and illnesses are costly to the injured/diseased person, the close family, the organisation as well as the State.

The objectives of this guideline are to assist employers and employees' representatives to have a better understanding and to put into application a uniform approach of Risk Assessment.

## 2. TERMS AND DEFINITIONS

For the purpose of this document, the following terms and definitions (ILO – OSH 2001) apply: -

- **Hazard:** the inherent potential to cause injury or damage to people's health.

- **Hazard identification:** process of recognising that a hazard exists and defining its characteristics.
- **Ill health:** identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/ or work related situation.
- **Material Safety Data Sheet (MSDS):** a form containing data on the properties of a particular substance. It includes information such as physical data (melting point, boiling point, flash point, etc.), toxicity, health effects, first aid, reactivity, storage, disposal, protective equipment, and spill handling procedures.
- **Occupational Exposure Limit (OEL):** the human exposure limits to hazardous substances.
- **Occupational Safety and Health (OSH):** work-related safety and health issues.
- **Occupational Safety and Health Management Systems (OSHMS):** a system, which the organisation sets in place to manage all occupational health and safety issues.
- **Risk:** a combination of the likelihood of an occurrence of a hazardous event and the severity of injury or damage to the health of people caused by this event.
- **Risk Assessment:** The process of evaluating the risks to safety and health arising from hazards at work.

### 3. PROVISIONS OF LAW – THE OCCUPATIONAL SAFETY AND HEALTH ACT 2005

#### Section 5 – General duties of employers

- (1) Every employer shall, so far as is reasonably practicable, ensure the safety, health and welfare at work of all his employees.

### **Section 10 - Risk Assessment by employer**

- (1) Every employer shall, within 30 days of the start of operation of his undertaking, make a suitable and sufficient assessment of –
- (a) any risk to the safety and health to which any employee is exposed whilst he is at work; and
  - (b) any risk to the safety and health of any person not in his employment arising out of or in connection with the conduct by him of his undertaking,
- for the purpose of identifying the measures he needs to implement in order to comply with the requirements imposed upon him by this Act, and any other enactment.
- (2) Any assessment made under subsection (1) shall be reviewed by the employer –
- (a) not later than 2 years after any assessment; or
  - (b) earlier –
    - (i) where the employer is informed by the Permanent Secretary that it is no longer valid; or
    - (ii) where there has been a significant change in the matters to which it relates.
- (3) Where an assessment carried out under subsections (1) and (2) reveals that safety and health measures are inadequate to meet the requirements of this Act, the employer shall implement measures required within the shortest possible delay.

### **Section 11 - Record of Risk Assessments**

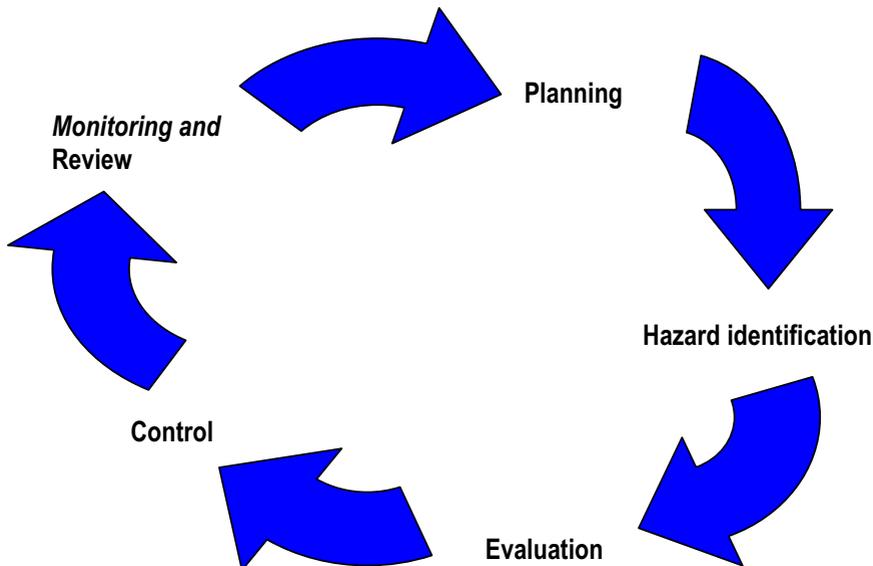
Where an employer employs more than 5 persons, he shall record in a register –

- (a) the significant findings of any assessment carried out under section 10(1); and
- (b) any group of employees identified as being especially at risk.

#### 4. THE 5-STEP APPROACH TO RISK ASSESSMENT (RA)

The Risk Assessment process consists of 5 major steps based on the methodology known to all managers as PDCA (Plan-Do-Check-Act).

The flow diagram below indicates the successive steps of Risk Assessment in chronological order. However, this process is very flexible and the team responsible for Risk Assessment has always the possibility to move back to the previous stage to ensure that the assessment is complete and done to the entire satisfaction of the investigating team.



**THE RISK ASSESSMENT PROCESS**

Figure 1

## THE RISK ASSESSMENT PROCESS

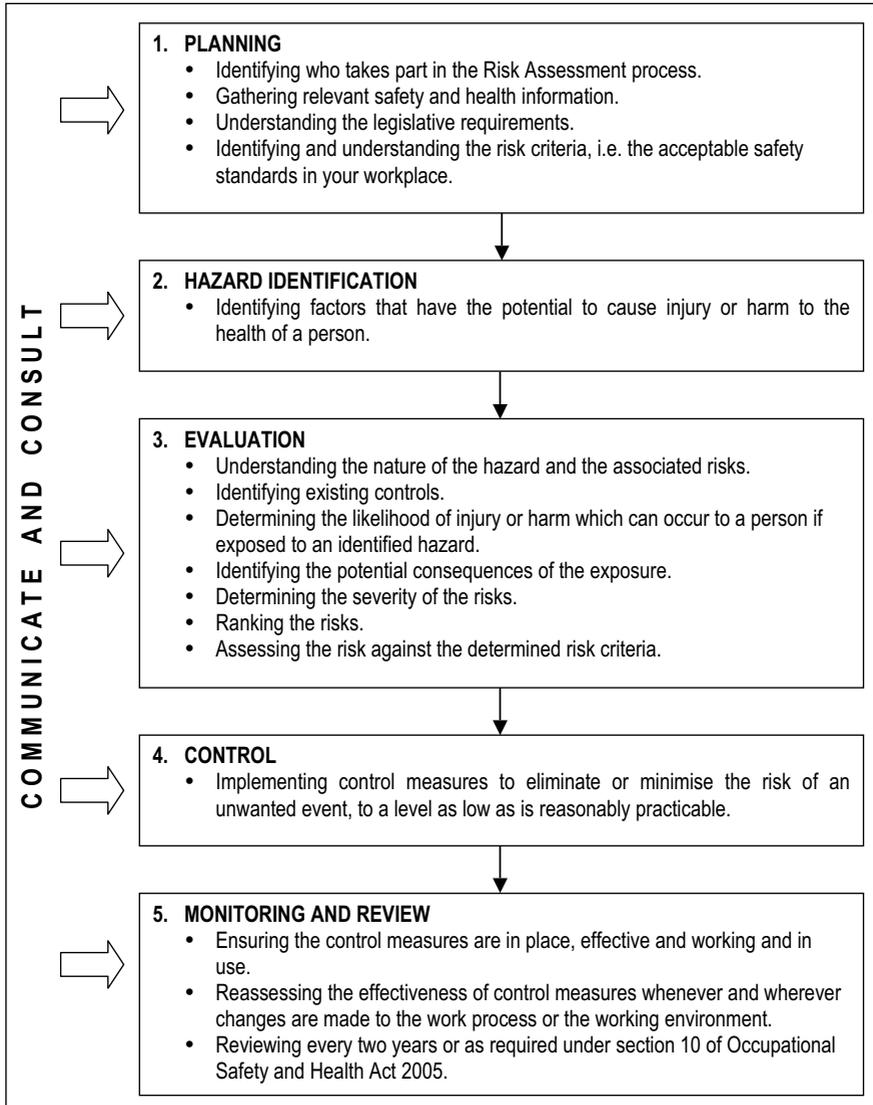


Figure 2

## STEP 1: PLANNING

Before the Risk Assessment is carried out it is very important to take into consideration the following elements: -

### **(a) The investigating person/team**

It is recommended that a team carries out the assessment. So far as is reasonably practicable, the team should consist of both employees' and employer's representatives. It should normally include safety and health personnel, safety and health representatives, representative of the maintenance team and where necessary specialists in specific fields.

### **(b) Collection of relevant data and information on the organisation and the high-risk areas**

The following information should be gathered beforehand, as they are crucial in the assessment process: -

- ◆ Legislative requirements (Acts, Regulations and Code of Practice)
- ◆ Accident statistics
- ◆ Layout plans of the factory
- ◆ Work organisation in the factory
- ◆ Inspection and audit reports (including reports of any previous Risk Assessment)
- ◆ Material Safety Data Sheets of products used
- ◆ Safe working procedures
- ◆ The company's risk criteria, etc.

### **(c) Determination of an acceptable level of risk (Risk criteria)**

At the very outset, the team should set up an acceptable level of risk in accordance with existing legislation/regulations/guidelines. The following factors should be taken into consideration to determine this acceptable level of risk:

- ◆ Legal requirements (OEL's)
- ◆ Technical factors

Consequently, this would allow the team to determine the required actions.

## STEP 2: HAZARD IDENTIFICATION

The team should then review all relevant data and incidents in its possession and carry out visits in all the places of work. Hazards are usually identified during inspections, discussion with employees and measurements. A list of common hazards is at table 1. Accidents and occupational health statistics should also be taken into consideration as well as non-routine operations. Those exposed to the hazards, employees, visitors etc, should be identified during this process. *Special consideration should be given to workers with incapacity, young/old workers and pregnant workers.*

### CLASSES OF HAZARDS

Types of hazards	Examples
Chemical	Arising from liquids, solids, dusts, fumes, vapours, gases
Mechanical	Crush, entanglement due to unguarded machinery, struck by objects
Physical	Noise, vibration, unsatisfactory lighting, radiation, electricity
Biological	From bacteria, viruses, infestations, infectious waste
Psychosocial	Resulting from stress
Environmental	Extreme temperatures (hot or cold), lack of ventilation, slippery floors
Fire	Explosion, fires
Ergonomic	Awkward postures and movements

Table 1

### STEP 3: EVALUATION

The likelihood of a hazard and its consequences are then compared to determine the severity of the risk as shown below: -

#### *RISK MATRIX*

		<u>LIKELIHOOD OF HAZARDOUS EVENTS</u>			
		VERY LIKELY (4)	LIKELY (3)	POSSIBLE (2)	UNLIKELY (1)
<u>SEVERITY</u>  <u>OF</u>  <u>HARM</u>	FATAL INJURY (4)	High (16)	High (12)	High (8)	Medium (4)
	SERIOUS INJURY (3)	High (12)	High (9)	Medium (6)	Medium (3)
	SIGNIFICANT INJURY (2)	High (8)	Medium (6)	Medium (4)	Low (2)
	MINOR INJURY (1)	Medium (4)	Medium (3)	Low (2)	Low (1)

Examples: -

Severity of harm	Examples of injury
Serious injury	Head injuries, internal bleeding, eye injuries, spinal injuries, fractures, dislocations, poisoning, any illness or injury resulting in 3 days or more lost workdays
Significant injury	Major cuts, bruises, sprains, illness or injury resulting in less than 3 days lost workdays.
Minor injury	Minor cuts and bruises

<b>Likelihood of hazardous events</b>	<b>Description of level</b>
Very likely	Could happen frequently
Likely	Occasionally
Possible	Possibility for incident to occur exist
Unlikely	Could happen but rarely

#### **STEP 4: CONTROL**

Depending on the level of risk, the risks are then assessed, controlled or reduced based on urgency for action which would depend on the risk rating given below:-

<b>Risk rating</b>	<b>Urgency of action</b>
<b>High (8 - 16)</b>	Immediate
<b>Medium (3 - 6)</b>	Within 3 months
<b>Low (1 - 2)</b>	Keep monitoring to keep risk at low level

The basic principles of control of risk are: -

- ◆ Elimination (most effective)
- ◆ Substitution
- ◆ Engineering controls
- ◆ Administrative controls and procedural measures.
- ◆ Personal protective equipment (least effective)

## STEP 5: MONITORING AND REVIEW

After the implementation of the control measures, it is important to **monitor** its effectiveness by inspections, testing or consultation with employees. Additionally, the law requires for a **review** every 2 years or earlier when the employer is informed by the Permanent Secretary that the Risk Assessment is no longer valid or when there has been a significant change in matters to which it relates.

## 5. CONCLUSION

This guideline on Risk Assessment will surely help employers and employees to have a better understanding of the process. However, Risk Assessment remains a complex exercise requiring proper expertise and use of relevant measuring equipment when appropriate. It is thus recommended that appropriate **training** be provided to all those involved in the Risk Assessment exercise to ensure that proper Risk Assessment is carried out to provide a decent, safer and healthier workplace for every one.



## RISK ASSESSMENT FORM

Risk Assessment at: <b>REGISTRY OFFICE</b>						
Description:						
Assessor/s: Messrs John, Raj and Sanjay						
Assessment date: 04 February 2011			Review date: 04 February 2013			
Hazard	Exposure	Control in place	Level of risk	Further action/s	Responsibility for action	Completion date
Slips and fall	Possible	<ul style="list-style-type: none"> <li>• Good housekeeping</li> <li>• Regular cleaning</li> </ul>	Low	Arrange for immediate cleaning after spills	Head Cleaner	Ongoing
Electrical	Possible	<ul style="list-style-type: none"> <li>• Proper electrical wiring</li> </ul>	Medium	Ensure regular check and keep record	Head Maintenance	Ongoing
	Possible	<ul style="list-style-type: none"> <li>• Proper electrical socket</li> </ul>	Medium	Ensure regular check	Head Maintenance	Ongoing
Fire	Possible	<ul style="list-style-type: none"> <li>• Training in use of fire extinguishers</li> <li>• Testing of fire fighting equipments</li> <li>• Regular fire drill</li> </ul>	Medium	Keep records of testing and drills	General Manager	04 June 2011
Electrical	Not necessary	<ul style="list-style-type: none"> <li>• Proper electrical socket</li> </ul>	Medium	Ensure regular check	Head Maintenance	02 May 2011

## REFERENCES

1. <http://www.mom.gov.sg/OSHD/Resources/Guides/Guidelines/index.htm>, accessed on August 2008.
2. <http://www.hse.gov.uk/risk/fivesteps.htm>, accessed on August 2008.
3. ILO (2001) – “*Guidelines on Occupational Safety and Health Management Systems – ILO-OSH 2001*”.
4. Department Industry and Resources, Australia (MOSHAB – 1999) – “*Safety and Health Risk Management Guideline*”.