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RISK MANAGEMENT PLAN

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Approved by:

Chan Sieng Ka Executive Director 1/1/2021

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1.0 Purpose

The purpose is to identify WSH hazards in relation to works that is undertaken by TEE SIN MACHINERY PTE LTD To evaluate the risks associated with these hazards and to ensure that appropriate actions are taken to manage the risks involved. This is in compliance with the Workplace Safety and Health (Risk Management) Regulations 2006.

References:

*Workplace Safety and Health (Risk Management) Regulations 2006

*Code of Practice on Workplace Safety and Health (WSH) Risk Management

2.0 Abbreviations

MOM	Ministry of Manpower		
PPE	Personal Protective Equipment		
RA	Risk Assessment		
RM	Risk Management		
RM Regulations	WSH (Risk Management) Regulations 2006		
RPN	Risk Prioritization Number		
SWP	Safe Work Procedure		
WSH	Workplace Safety and Health		



3.0 Definitions

Term	Definition					
The Company	TEE SIN MACHINERY PTE LTD					
Hazard	Anything, any source or any situation with the potential to cause bodily injury or ill-health, and includes any physical, chemical, biological, mechanical, electrical or ergonomic hazards, etc.					
Risk	The likelihood that a hazard will cause a specific bodily injury to any person.					
Risk Assessment (RA)	The process of evaluating the probability and consequences of injury or illness arising from exposure to an identified hazard, and determining the appropriate measures for risk control.					
Administrative Control	Implementation of any administrative requirement which includes a Permit-To-Work (PTW) system.					
Engineering Control	(a) Application of any scientific principle for the control of any workplace hazard; and (b) Application of physical means or measures to any work process, equipment or the work environment such as the installation of any barrier, enclosure, guarding, interlock or ventilation system.					
Types of Hazards Classification	Physical, Chemical, Biological, Ergonomic, Psychological, Environmental, Electrical, Mechanical and Fire /explosion.					
Risk Control	This is the process of eliminating or minimizing the risks by appropriate safeguards. Hierarchy of Controls (on priority basis)					
	1 st) Elimination (most effective) 2 nd) Substitution					
	3 rd) Engineering Controls					
	4 th) Administrative Controls e.g. safe work procedures to control the risk. 5 th) Training / Supervision					
	6 th) Personal Protective Equipment (PPE) usage (least effective).					
Risk Management (RM)	It is a process of identifying hazards, evaluating risks and controlling the risks.					
Safe Work Procedure (SWP)	Procedure for carrying out work safely, and includes any procedure which is to be taken to protect the safety and health of persons in the event of an emergency.					
Substitution	The replacement of any hazardous material, process, operation, equipment or device with less hazardous ones.					
Reasonably Practicable	All feasible steps and measures within the resources, time available and within the control of Management and staff.					
Risk Assessment Team	Team responsible for conducting RAs within the scope defined by the organization.					



4.0 WSH Policy

Workplace Safety and Health Policy

We are committed to providing staff, contractors and visitors with a healthy and safe environment. This policy applies to the company premises and activities of the company. The company strives to fully integrate health and safety into all aspects of its activities through a continuous improvement of processes.

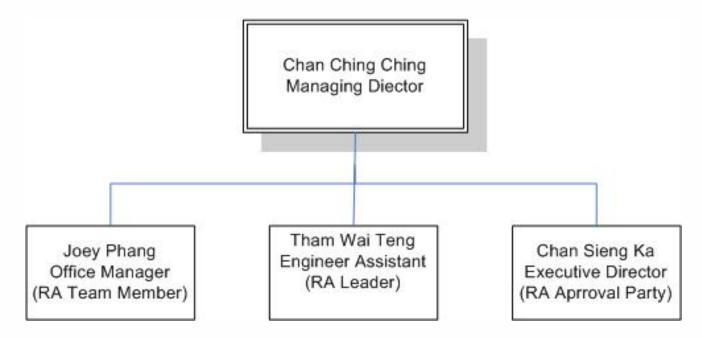
Our commitments are:

- maintain a safe and healthy workplace through risk management and Workplace Safety and Health (WSH) programme;
- implementing and maintaining a framework that ensures the systematic
 Management of health and safety throughout all sites and workplaces;
- Start work in good health condition;
- Preventing unsafe Act;
- Good housekeeping of workplaces;
- Comply with applicable legal compliance and other requirements; and
- Continually improvement on health and safety performance through efficient Management system

Chan Sieng Ka Executive Director 1/1/2021



5.0 RA Team Organization Chart





6.0 Duties and Responsibilities

6.1 Director

- 6.1.1 Ensure that a RA is conducted on WSH risks associated with any activity in the workplace.
- 6.1.2 Take all reasonably practicable steps to eliminate any foreseeable risk to any person.
- 6.1.3 Take measures to control the risk by means of, and in the following order of consideration where risk elimination is not reasonably practicable:
 - substitution;
 - · engineering control;
 - · administrative control; and
 - provision and use of suitable personal protective equipment (PPE).
- 6.1.4 Support the implementation of risk control measures recommended by the RM or RA Teams.
- 6.1.5 Require the RM Leader to provide regular updates of the RA done and risk control measures implemented to reduce or eliminate identified risks.
- 6.1.6 Require RA updates at each WSH Committee meeting, if such a committee is established, or at the workplace's regular meetings (e.g., new findings, progress of risk control actions).
- 6.1.7 Require the contractor or supplier where work has been assigned or awarded, to conduct a RA. The contractor or supplier must take reasonably practicable measures to eliminate, or reduce to as low as reasonably practicable, the risk that may be posed by their work (e.g., when they work with machines, equipment or hazardous substances).
- 6.1.8 Ensure that a Risk Register is available and maintained at the workplace.
- 6.1.9 Ensure that the Risk Register is prepared in accordance with this CP.
- 6.1.10 Ensure that the Risk Register is readily available for review by designated persons at the workplace and by regulatory agencies.
- 6.1.11 Ensure that RA records, including but not limited to RA forms and control measures records, are kept for at least three years from the RA approval date.
- 6.1.12 Review and, if necessary, revise the RA at least once in three years from the RA approval date, or:
 - upon any accident, incident, near miss or dangerous occurrence;
 - when there is any significant change in work process or activity; or
 - when new information on WSH risks is made known.
- 6.1.13 Monitor effectiveness of the risk control measures.



6.2 Manager

This may be the person who manages a physical area within the workplace. The Managing Director is to determine the appropriate level of engagement for this role.

- 6.2.1 The Manager who oversees the area, function or activity where the WSH risks exist, shall:
 - Ensure that a RA is conducted and risk control measures are implemented before any new work is carried out in the Manager's area.
 - Approve the RA conducted for the Manager's area. The Manager should also ensure that the risk level is not rated "High Risk" when approving work to be carried out.
 - Ensure that the risk control measures are implemented without delay.
 - Ensure that, where applicable, all operations have established Safe Work Procedures (SWPs).
 - Ensure that all persons exposed to the risks are informed of: the nature of risks; any measures or SWP implemented; and - the means to minimise or eliminate the risks.
 - Ensure that the effectiveness of the risk control measures is monitored.
 - Revise the RA if the risk control measures are inadequate and ineffective after the implementation, by obtaining more information and/or modifying controls.
 - Maintain RA documentation of control measures and SWP that were implemented.
- 6.2.2 The Manager shall assist the Employer to implement the requirements in Clauses 6.1.8 to 6.1.13.
- 6.2.3 The Manager may authorize other persons to execute the duties mentioned above but remains accountable for them.
- 6.2.4 The Manager should work together with a Human Resource Manager to specify WSH training necessary for job positions and functions.



6.3 Human Resource Manager /Executive

- 6.3.1 Ensure that a robust recruitment process is in place to choose suitable job candidates who are able to meet position requirements and WSH obligations.
- 6.3.2 Specify safety and health responsibilities in the job descriptions of employees, and ensure that these responsibilities are effectively communicated to all employees.
- 6.3.3 Ensure that all new employees are given appropriate and sufficient orientation, and WSH training to equip them with the relevant knowledge, skills and abilities to succeed in their positions.
- 6.3.4 Support the Director and Manager to ensure that RA, risk control measures and SWPs are effectively communicated to all employees.
- 6.3.5 Ensure that WSH training and other related RA records are documented.
- 6.3.6 Work with the Manager and RM or RA Leaders to consider safety and health outcomes in employees' performance evaluation, remuneration and discipline, and to ensure consistent behavior and practices in line with organizational expectations, where applicable.
- 6.3.7 Implement programmes that support and maintain employees' safety, health and wellbeing.
- 6.3.8 Participate in WSH inspections of organization's premises to ensure that WSH legislations are followed and WSH issues are promptly addressed, where appropriate.
- 6.3.9 In the absence of a Human Resource Manager in the organization, the equivalent person undertaking such a work profile of the Human Resource Manager should execute the duties mentioned above.



6.4 RM / RA Team Leader

6.4.1 The RM Leader shall assist the Director and Manager in coordinating RM within the workplace.

6.4.2 The RM or RA Leader shall:

- a) Provide regular updates on the appropriate risk control measures implemented to eliminate or reduce identified risks to the Director, preferably monthly but no less than once a year;
- b) Obtain approval from the Director or the designated Manager for the implementation of risk control measures; and
- c) Assist the Director to ensure that the Risk Register is prepared in accordance with this Risk Man.

6.5 RM / RA Team Members

- 6.5.1 To participate proactively in risk assessment meetings;
 - a) To draft up safe work procedures so as to minimize safety and health risks at the workplace; and
 - b) To bring up or feedback to RA Team Leader on any shortcomings in risk control measures or safe work procedures being implemented.

6.6 Employees

- 6.6.1 Employees are to adhere to the measures stated in the RAs.
- 6.6.2 Employees are to report to their immediate supervisors any incident, accident, near miss or dangerous occurrence so that prompt action can be taken to address them.





7.0 Extent of RA – Determine what is to be assessed

Other than the following of the scope and main work activities identified for Risk Assessments: -

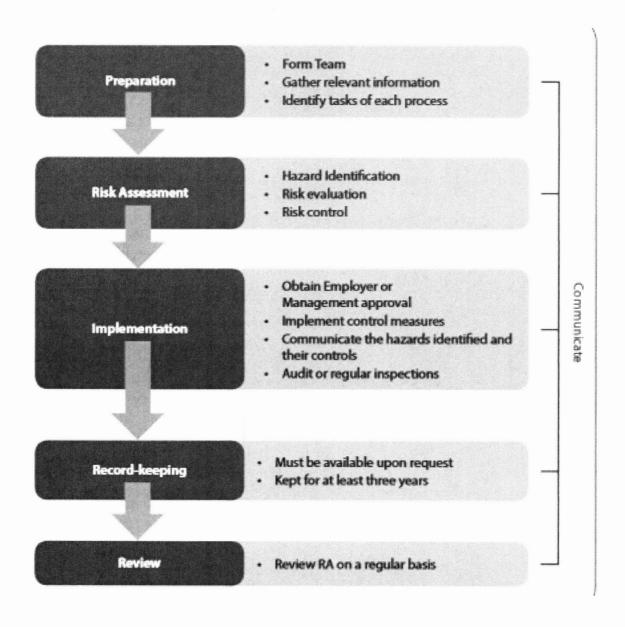
It is important to use the Risk Assessment method logic to be applicable whenever there are additional or new inputs of Operations which may not be reflected under the usual or Routine Activities where else which we may preceded these as Non-Routine activities are equally containing Potential of Risks and Possibilities of Hazards.





8.0 RISK MANAGEMENT PROCESS

It is the Company's policy that risks must be managed proactively. Risk should be identified and understood before the worst happens so that appropriate controls can be put in-place to eliminate or minimize loss. The steps of OSH risk management process are as shown:





8.1 Preparation

The formation of "Risk Assessment Team" consists of <u>Team Leader</u> and <u>Team Members</u>. The Risk Assessment Team is to Identify; tasks of each process i.e. work out the Inventory of Work Activity Form and to gather relevant Legal information e.g. identify all relevant Legislations, Singapore Standards, Code of Practices and other applicable Regulatory requirements; workplace layout plan; process or work flowchart, list of work activities in the process, records of past incidents and accidents, relevant specifications, observations and interviews, details of existing risk controls, feedback from employees, clients, suppliers or other stakeholders concerned, SWPs, other information such as <u>Individual Health & Medical condition</u> (e.g. Physical Fitness, Strength, Hearing, Hearing, Eyesight, knowledge & Pre-existing condition) of employees in the workplace or prior-activity deployment to be assessed by Pre-employment & yearly medical check-up.





8.2 Risk Assessment

8.2.1 Step 1: Classify work activities according to:

- a) Geographical areas within/outside the organization's premises (workplace);
- b) Stages in the provision of a service;
- c) Planned and reactive work;
- d) Defined task;
- e) Routine & Non routine Activities
- f) Any combination of the above.





8.2.2 Step 2: Identify hazards

In hazard identification, three questions were asked: is there a source of harm, who (what) could be harmed and how could harm occur?

A hazard prompt list is used to assist in the identification process.

Hazards that clearly possess negligible potential of harm should always be documented and given further consideration, regardless it is originating from outside or inside of the workplace which is capable to affect the safety & health of person under the control of the occupier.

The assessment of risks to health associated with exposure to harmful energies may require measurements.

In hazard identification there is also need to look for routine & non-routine activities.

Apart from the above points during Hazard Identification & Risk Assessment process, following points are also needed to be considered:

- a) Activities of all persons having access to the workplace (including contractors and visitors) need to be covered;
- b) Human behavior, capabilities and other human factors such as Fatigue & Health Management, pre-medical or existing health condition toward Operation demands and communications also need to be considered in HIRA;
- c) Identified hazards originating outside the workplace capable of adversely affecting the health and safety of persons under the control of the organization within the workplace also need to be covered;
- d) Hazards created in the vicinity of the workplace by work-related activities under the control of the organization;
- e) Infrastructure, equipment & materials at the work place whether provided by organization or others;
- f) Changes or proposed changes in the organization, its activities, or materials;
- g) Modifications to the OHS management system, including temporary changes, and their impacts on operations, processes, and activities;
- h) Any applicable legal obligations relating to risk assessment and implementation of necessary controls;
- i) The design of work areas, processes, operating procedures and work organization, including their adaptation to human capabilities.



8.2.3 Step 3: Determine risk

The Risk Assessment is based on the tolerability of risk. The level of risk is evaluated by estimating the potential severity of harm and the likelihood of harm. A number is assigned to each level of severity and likelihood of harm in tables 1 & 2 below. The risk level is derived by multiplying the severity level and the likelihood.

When considering the severity of harm, factors such as part(s) of body affected (refer to Table 1) and equipment damage should be taken into account

When considering the likelihood of harm, factors such as number of exposed personnel, frequency and duration of exposure, potential failure of services, machinery and safety devices, exposure to elements and unsafe acts should be taken into account (refer to Table 2).

Table 1. Severity (Reference: Code of Practice for Risk Management)

Leve	l Severity	Description
5	Catastrophic	Fatality, fatal diseases or multiple major injuries.
4	Major	Serious injuries or life-threatening occupational disease (includes amputations, major fractures, multiple injuries, occupational cancer, acute poisoning).
3	Moderate	Injury requiring medical treatment or ill-health leading to disability (includes lacerations, burns, sprains, minor fractures, dermatitis, deafness, work-related upper limb disorders).
2	Minor	Injury or ill-health requiring first-aid only (includes minor cuts and bruises, irritation, ill-health with temporary discomfort).
1	Negligible	Not likely to cause injury or ill-health

Table 2. Likelihood (Reference: Code of Practice for Risk Management)

Leve	l Likelihood	Description
1	Rare	Not expected to occur but still possible.
2	Remote	Not likely to occur under normal circumstances.
3	Occasional	Possible or known to occur.
4	Frequent	Common occurrence.
5	Almost Certain	Continual or repeating experience.

When considering the two criteria, the adequacy of the risk control measures already implemented shall be determined in the light of the updated legal requirements and codes of practice. Ensure a periodic review to the related Authorities Website or Hotline for any inquiry or update.



8.2.4 Step 4: Decide risk tolerability

The 5-by-5 severity of harm and likelihood of harm-criteria risk assessment methodology (refer to Table-3 and Table-4) should be used to evaluate the level of tolerable risk involved in the activities, products and services.

Likelihood Severity	Rare (1)	Remote (2)	Occasional (3)	Frequent (4)	Almost Certain (5)
Catastrophic (5)	5	10	15	20	25
Major (4)	4	8	12	16	20
Moderate (3)	3	6	9	12	15
Minor (2)	2	4	6	8	10
Negligible (1)	1	2	3	4	5

Table 3. 5 by 5 Matrix (Reference: Code of Practice for Risk Management)

Risk level	Risk Acceptability	Recommended Actions		
Low Risk	Acceptable	 No additional risk control measures may be needed. Frequent review and monitoring of hazards are required to ensure that the risk level assigned is accurate and does not increase over time. 		
Medium Risk	Tolerable	 A careful evaluation of the hazards should be carried out to ensure that the risk level is reduced to as low as reasonably practicable (ALARP) within a defined time period. Interim risk control measures, such as administrative controls or PPE, may be implemented while longer term measures are being established. Management attention is required. 		
High Risk	Not acceptable	 High Risk level must be reduced to at least Medium Risk before work commences. There should not be any interim risk control measures. Risk control measures should not be overly dependent on PPE or appliances. If practicable, the hazard should be eliminated before work commences. Management review is required before work commences. 		

Table 4. Risk Evaluation (Reference: Code of Practice for Risk Management)



8.2.5 Step 5: Determine risk control action plans

Upon risk evaluation, determine risk control and Implementation.

All due date shall be accepted by the Implemented person appointed by Top management, with indication on the Implemented Date as record & verified by Top management accordingly. All High Risk shall be mitigated within 3 days, mid risks within 7 days and while low risk shall be within 14 days of timeline for effective implementation.

Due date	Implemented date	Implemented Person	Implement Review	Reduce Risk	Reliability	Ease of use	Management Approved Signed





8.2.6 Risk Control

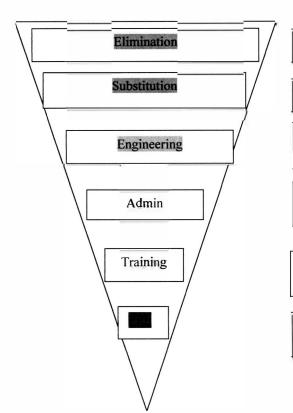
When considering additional measures to reduce risk, the most effective measures in Hierarchy of Control should be considered first.

Hierarchy of Risk Controls

Risk control should be considered according to a hierarchy based on the concept that it is more likely to be successful to try making a workplace safe rather than safe employee mentality. Human by nature takes risk and makes error. It is not possible to ensure an error-free individual. So the first approach is to make an error-tolerant working environment. The hierarchy of controls is illustrated as below.

*Always remember: Personal Protective Equipment (PPEs) should be the last consideration because it should be the backup or supplementary control and not for first line of risk control

Examples for each control:



Elimination-E.g. Asbestos being eliminated from the workplace

Substitution-E.g. Flammable solvents substituted by water-based materials

Engineering-E.g. install Machine guards, local exhaust ventilation, enclosures and barricade from possible risk and barms

Admin-E.g. Job rotation, safe work procedures, good housekeeping, checklist, lock-out & tag-out and Permit-To-Work System

Training-E.g. Trained & committed supervisor, training of workers and Mass Briefing / Training

PPE-E.g. Safety helmet, safety shoes, safety body harness, Safety glasses



8.2.6.1 1st Control – Elimination

The simplest way to deal with a risk is to get rid of it. This can apply to materials, processes and even technologies.

8.2.6.2 2nd Control – Substitution

It is often possible to replace relatively hazardous materials or processes with safer alternatives which offer the same general properties. Flammable solvents substituted by water-based materials.

8.2.6.3 3rd Control - Engineering Controls

8.2.6.3.1 Engineering controls at source

Control at source stops hazardous exposure before they reach the workplace (and the employee); Examples of control measures include process automation, changes in engineering design to reduce the noise generation, the introduction of mechanical handling equipment to reduce manual handling, or the use of welded piping instead of screwed joints.

8.2.6.3.2 Physical Barriers

Examples include machine guards and automatic lock out systems: a fail-safe device.

8.2.6.3.3 Engineering Controls to reduce Exposure

These are things such as partial or temporary enclosure, enclosed spray booths, fume cupboards, glove boxes, dilution or local exhaust ventilation, bunding wall, dust suppression, pre-wetting. Again, engineering controls must be maintained properly to ensure maximum performance.

8.2.6.3.4 Segregation (by distance):

The relocation of hazardous operations away from the workforce may also be helpful in controlling hazards. The hazard can be located away from normal working operations especially public thoroughfare area.

8.2.6.3.5 Segregation (by time):

The timing of hazardous operations can also control hazards. Obvious examples are: planned preventive maintenance during factory shut-down period. Contaminant generating or high risk work activities can occur outside normal work hours.



8.2.6.3.6 Separation of Personnel

Move operators out of contamination producing areas or enclose operators in a clean environment such as an air-conditioned room or cubicle.

8.2.6.4 4th Control - Administrative Controls

Controls which rely on human behavior are controls which mitigate hazard by the expectation that the exposed person will undertake certain safe work procedures. As human beings can be unreliable, administrative controls can also be unreliable. Examples of administrative controls are given below:

8.2.6.4.1 Job rotation:

It is possible to limiting exposure by rotating people out of dangerous area. This approach works by reducing the duration of hazard exposure for individual worker, or by reducing the numbers of workers exposed to a hazard to the bare minimum. This approach is quite effective for some hazards, such as radiation and noise. In job rotation, the worker is trained to carry out a number of tasks, not all related to exposure (also called multi-skilling). This has an added advantage of producing a better trained workforce which is more adaptable to change.

Job rotation will only work if it is part of normal production routine, and the replacement personnel should be trained properly.

8.2.6.4.2 Safe systems of work:

These are systems which minimize hazard by selecting the safest way of getting a job done.

This might be by:

- a) reference to local legislations, industry or otherwise approved codes of practices or standards;
- b) compliance with the manufacturer's instructions;
- c) Follow standard instructions or safe work procedures developed specifically at the workplace.

8.2.6.5 5th Control & the Last Control - Personal Protective Equipment (PPE)

Although at first sight one might think personal protective equipment to be an effective control, in practice it is not ideal because it is seldom used as often as it should be and also requires proper maintenance and checking. The use of personal protective equipment also requires both administrative & disciplinary controls and hands-on training for it to be effective. The fact that it is last in the hierarchy does not mean that it should not be used, merely that it is the last & final resort to control residual risk when all other controls have been put in-place as well.



8.3 Implementation and Review

8.3.1 Implementation Person and Date

A specific person should be identified to lead the implementation of the Additional Controls. The name of the specified person should be recorded in the "implementation Person" column.

The due date of the implementation is to be recorded in the "due-date" column.

The implementation person is to provide progress updates to the RA team on a periodic basis as determine by the Team Leader.

8.3.2 RA Approval

The completed or reviewed and changed RA forms must be approved by the Managing Director.

8.3.3 Implementation Action

As far as possible, the Team Leader is to implement the recommended risk control measures as soon as possible.

An action plan has to be prepared for the implementation of the control measures. The plan shall include the responsible person and time frame for implementing the risk control measures and approval by Management for the completed verification.

8.3.4 Continual Monitoring

The next step is continual monitoring and review. Monitoring means regular check how the system is performing. The hazard, the effects of the hazard and the effectiveness of control measures should all be monitored and accessed by the criteria for effectiveness on; 1) Reduced Risks, if not eliminated, 2) Reliability, 3) Ease of use or 4) Interference with productivity.

Review implies a less routine activity to check that the systems are in-place and are working effectively.



8.3.5 Communication and Training

Communication and Training is also important to ensure that people understand and accept risk control strategies before implementation.

Any relevant or affected Stakeholders such as (Safety Committees Members, clients, possible visitors of public, workforces or sub-contractors and occupier) on prior or after of any hazards identified and the implemented controls or Implementation and Monitoring through regular inspections or audit report resulted changes or Regular Review or any necessary change of RA due to incident/accident or changes of legal requirement;

Shall be communicate through various methods of;

- a) R.A & SWP Briefing/submission,
- b) Toolbox meeting,
- c) Notice board display,
- d) Email, MR / Safety Meeting or
- e) In-house training.

8.3.6 Documentation

All steps of the risk management process at all stages should be documented both for good management practices and also if the worst were to happen, it is capable to demonstrate that procedures were followed to the best risk management practices.

Documentation has the following purposes:

- a) To demonstrate that risk management was conducted properly,
- b) To provide a record of risks,
- c) To provide decision makers with a plan for approval and implementation,
- d) To provide an accountability tool / risk owner,
- e) To facilitate monitoring and review,
- f) To provide the audit trail, and
- g) To share and communicate information.

Documents must be communicated to people and must be auditable.



8.4 Records-keeping

Every record shall be maintained and kept for a period of at least 3 years.

8.4.1 Review of Risk Assessments

Every record shall be reviewed and / or revised at least **once in every 3 years** subject to precedence of the following conditions: -

- a) Upon the occurrence of bodily injury to any person as a result of exposure to a hazard in the workplace; or
- b) If there is a significant change in work practices or work procedures; or
- c) If there is any update on legislation/s that will affect our work activity operations.
- d) Any possible Near Missed, Dangerous Occurrence or III-Health from work reported

