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Shree Ganesh Enterprises

(PROJECTS, MAINTENANCE & DEALER)

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HIRA (Hazard Identification and Risk Assessment)

The purpose of this guideline is to provide a systematic and objective approach to assessing hazards and their associated risks that will provide an objective measure of an identified hazard as well as provide a method to control the risk. It is one of the general duties as prescribed under the Occupational Safety and Health Act 1994 (Act 514) for the employer to provide a safe workplaces to their employees and other related person.

Term And Definitions:

Hazard means a source or a situation with a potential for harm in terms of human injury or ill health, damage to property, damage to the environment or a combination of these.

Hazard control means the process of implementing measures to reduce the risk associate with a hazard.

Hierarchy of control means the established priority order for the types of measures to be used to control risks.

Hazard identification means the identification of undesired events that lead to the

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Hazard identification means the identification of undesired events that lead to the

materialization of the hazard and the mechanism by which those undesired events could occur.

Risk means a combination of the likelihood of an occurrence of a hazardous event with specified period or in specified circumstances and the severity of injury or damage to the health of people, property, environment or any combination of these caused by the event.

Risk assessment means the process of evaluating the risks to safety and health arising from hazards at work.

Risk management means the total procedure associated with identifying a hazard, assessing the risk, putting in place control measures, and reviewing the outcomes.

Basic Concepts:

What is risk?
Risk is something that we as individuals live with on a day-to-day basis. People are constantly making decisions based on risk. Simple decision in daily life such as driving, crossing the road and money investment all imply an acceptance risk. Risk is the combination of the likelihood and severity of a specified hazardous event occurring.

In mathematical term, risk can be calculated by the equation – **Risk = Likelihood x Severity** Where,

Likelihood is an event likely to occur within the specific period or in specified circumstances and,

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

Planning And Conducting Of Hira :

The purpose of HIRA are as follows:-

- a. to identify all the factors that may cause harm to employees and others (the hazards);
- b. to consider what the chances are of that harm actually be falling anyone in the circumstances of a particular case and the possible severity that could come from it (the risks); and
- c. to enable employers to plan, introduce and monitor preventive measures to ensure that the risks are adequately controlled at all times.

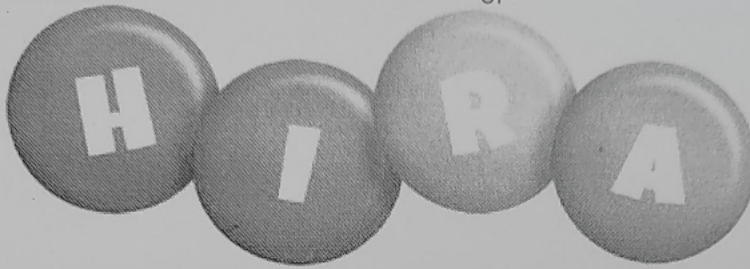
HIRA activities shall be plan and conducted:

- a) For situation:
 - i. where hazard appear to pose significant threat;
 - ii. Uncertain whether existing controls are adequate; or/and
 - iii. Before implementing corrective or preventive measures.
- b) By organization intending to continuously improve OSH Management System. It should be the duty of the employer to assign a trained personnel to lead a team of employees associated with one particular process or activity to conduct HIRA.

Process

of

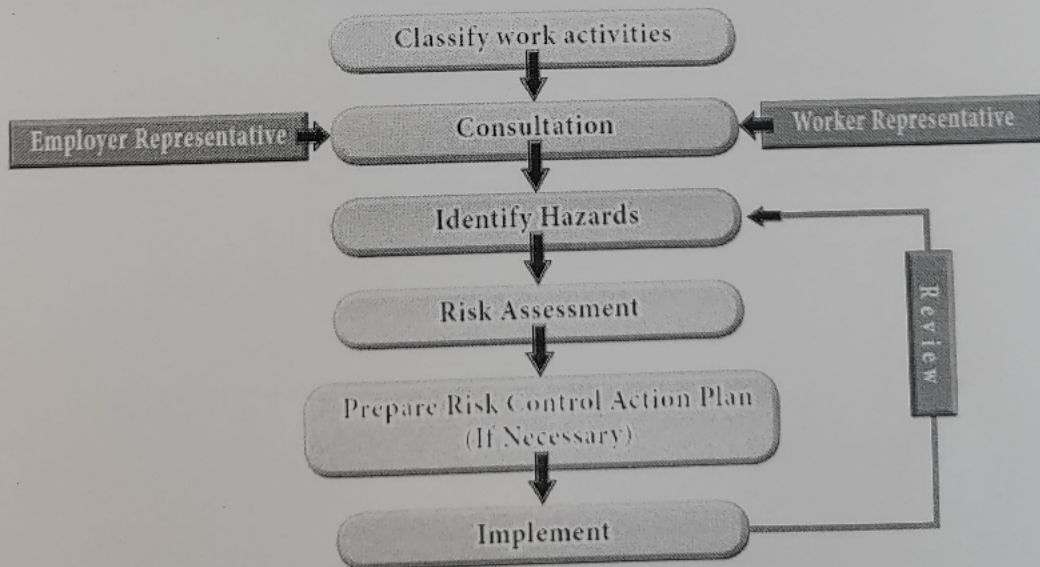
HIRA



Process of HIRA requires 4 simple steps :

- (a) classify work activities;
- (b) Identify hazard;
- (c) conduct risk assessment (analyse and estimate risk from each hazard), by calculating or estimating –
 - i. likelihood of occurrence, and
 - ii. Severity of hazard;
- d. decide if risk is tolerable and apply control measures (if necessary).

Flow chart for HIRA process



Classify work activities:

Classify work activities in accordance with their similarity, such as :

1. geographical or physical areas within/outside premises;
2. stages in production/service process;
3. Not too big e.g. building a car;
4. Not too small e.g. fixing a nut; or
5. Defined task e.g. loading, packing, mixing, fixing the door.

Hazard identification:

The purpose of hazard identification is to highlight the critical operations of tasks, that is, those tasks posing significant risks to the health and safety of employees as well as highlighting those hazards pertaining to certain equipment due to energy sources, working conditions or activities performed. Hazards can be divided into three main groups, health hazards, safety hazards, and environmental hazards.

Health hazards:

An occupational health hazard is any agent that can cause illness to an individual. A health hazard may produce serious and immediate (acute) effects, or may cause long-term (chronic) problems. All or part of the body may be affected. Someone with an occupational illness may not recognize the symptoms immediately. For example, noise-induced hearing loss is often difficult for the affected individual to detect until it is well advanced. Health hazards include chemicals (such as battery acid and solvents), biological hazards (such as bacteria, viruses, dusts and moulds), physical agents (energy sources strong enough to harm the body, such as electric currents, heat, light, vibration, noise and radiation) and work design (ergonomic) hazards.

Safety hazards:

A safety hazard is any force strong enough to cause injury, or damage to property. An injury caused by a safety hazard is usually obvious. For example, a worker may be badly cut. Safety hazards cause harm when workplace controls are not adequate.

Some examples of safety hazards include, but are not limited to:

- slipping/tripping hazards (such as wires run across floors);
- fire hazards (from flammable materials);
- moving parts of machinery, tools and equipment (such as pinch and nip points);
- work at height (such as work done on scaffolds);

- ejection of material (such as from moulding);
- pressure systems (such as steam boilers and pipes);
- vehicles (such as forklifts and trucks);
- lifting and other manual handling operations; and
- Working alone.

Environmental hazards:

An environmental hazard is a release to the environment that may cause harm or deleterious effects. An environmental release may not be obvious. For example, a worker who drains a glycol system and releases the liquid to a storm sewer may not be aware, of the effect on the environment. Environmental hazards cause harm when controls and work procedures are not followed.

Hazard identification technique:

The employer shall develop a hazard identification and assessment methodology taking into account the following documents and information:



- any hazardous occurrence investigation reports;
- first aid records and minor injury records;
- work place health protection programs;
- any results of work place inspections;
- any employee complaints and comments;
- any government or employer reports, studies and tests concerning the health and safety of employees;
- any reports made under the regulation of Occupational Safety and Health Act, 1994
- the record of hazardous substances; and
- any other relevant information.

The hazard identification and assessment methodology:

The hazard identification and assessment methodology shall include:

- Steps and time frame for identifying and assessing the hazards. One must define the steps for the identification of hazards and a time frame for this identification. The following information should be included :
 - who will be responsible for the identification: for example, it may be the work place health and safety committee, or an individual or individuals appointed by the committee;
 - the way in which the identification reports are processed: for example, they may

be compiled and processed by the committee, or by individuals appointed by the committee:

iii) the identification time frame: for example, the identification of hazards for workshop A must be completed in December, for workshop B in April and for workshop C in November.

b. The keeping of a record of the hazards.

After having identified the hazards, one must establish and maintain an identification record, either in print or electronic format.

c. A time frame for reviewing and, if necessary, revising the methodology.

The date for the review of the identification: for example, the review of the identification method will be carried out every three years.

To complete hazard identification, one can use techniques to identify hazards. Some examples of techniques include, but are not limited to:

- i. work place inspections;
- ii. task safety analysis or job hazard analysis;
- iii. preliminary investigations;
- iv. potential accident factors;
- v. failure analysis;
- vi. accident and incident investigations.

It is in your interest to adopt your own process and your own identification techniques so that they match one management procedures and the size of business. In fact, the identification method may vary depending on the size of the work place.

Analyze and estimate risk:

Risk is the determination of likelihood and severity of the credible accident/event sequences in order to determine magnitude and to priorities identified hazards. It can be done by qualitative, quantitative or semi quantitative method.

A **qualitative analysis** uses words to describe the magnitude of potential severity and the likelihood that those severity will occur. These scales can be adapted or adjusted to suit the circumstances and different descriptions may be used for different risks. This method uses expert knowledge and experience to determine likelihood and severity category.

In **semi-quantitative** analysis, qualitative scales such as those described above are given values. The objective is to produce a more expanded ranking scale than is usually achieve in qualitative analysis, not to suggest realistic values for risk such as is attempted in quantitative analysis.

Quantitative analysis uses numerical values (rather than the descriptive scales used in qualitative and semi-quantitative analysis) for both severity and likelihood using data from a variety of sources such as past accident experience and from scientific research. Severity may be determined by modeling the outcomes of an event or set of events, or by extrapolation from experimental studies or past data. Severity may be expressed in terms of monetary, technical or human impact criteria, or any of the other criteria. The way in which severity and likelihood are expressed and the ways in which they are combined to

provide a level of risk will vary according to the type of risk and the purpose for which the risk assessment output is to be used.

Risk assessment:

Risk can be presented in variety of ways to communicate the results of analysis to make decision on risk control. For risk analysis that uses likelihood and severity in qualitative method, presenting result in a risk matrix is a very effective way of communicating the distribution of the risk throughout a plant and area in a workplace.

For Shree Ganesh Enterprises



Kuber Rajkumar
(Proprietor)