

## 1. PURPOSE

To establish and maintain a procedure for the ongoing identification of hazards, the assessment of risks and the implementation of necessary control measures to Eliminate, Minimise or Control the risk of exposure to hazards associated with the activities or conditions associated with the work being done at the operation.

Each operation is allowed to implement their own hazard identification and risk assessment forms and matrix, as long as it conforms to the minimum requirements listed in this guideline

## 2. SCOPE

- a. This procedure defines the hazard identification and risk assessment protocol.
- b. The process shall include all routine, non-routine, emergency and activities of all personnel having access to the workplace, including contractors and visitors.
- c. Facilities at the workplace, whether provided by the organization or other must be part of the risk identification process.
- d. The results of the assessments are used when setting Occupational Health, Safety and Environmental objectives.

## 3. REFERENCE DOCUMENTS

- a. Safety, Health and Environmental Management System
- b. SIMRAC (Tripartite Working Group on Risk Assessments – Report)

## 4. CONTROL

- a. This procedure is a controlled document in terms of the Document Control Procedure.
- b. Controlled documents may only be revised as prescribed in the SHEQ Manual.
- c. The template attached to this procedure is a recommended form to be used when conducting Baseline and Issue Base hazard identification and risk assessments.
- d. The risk assessor and all personnel tasked to conduct Hazard Identification and Risk Assessments in a formalized documented format, working at the operation, must make use of this methodology and control as described herein.
- e. Methodology used by contractors to conduct and document Hazard Identification and Risk Assessments must conform to the minimum requirements stipulated in this procedure. The site managers are responsible to ensure that these standards are adhered to.

## 5. DEFINITIONS

- a. **Hazard** means something which has the potential to cause harm

- b. **Risk** means the likelihood that the harm from a particular hazard will occur
- c. **Consequence** means the degree of harm or damage. The potential severity of the injuries or ill health and/or the number of people affected and size of area affected
- d. **Exposure** means how often and for how long the workers are exposed to the hazard or the area has been exposed to negative impacts
- e. **Probability** means the chance that a person, or persons, will be harmed during the exposure period or environment will be negatively impacted
- f. **SHEQ** Safety, Health, Environmental and Quality
- g. **MSDS** Material Safety Data Sheet

## 6. TYPES OF RISK ASSESSMENTS:

### a. Baseline Risk Assessment (Routine and Non-Routine activities)

- i. Comprehensive risk analysis of the process flow
- ii. Establish the liability level in terms of risks
- iii. Determine the major risks
- iv. Identify the priorities
- v. Issue a programme for risk control
- vi. The results of a baseline risk assessment may lead to other separate, more in-depth studies such as critical task registers
- vii. Review every two years or when major operational or plant structure changes occur
- viii. Divide the operation in geographical areas
- ix. Divide the geographical areas into operational areas
- x. Operation areas are divided into activity areas
- xi. Determine the hazards associated with all the activities and allocate a risk to each activity. This is achieved by making use of a form

### b. Issue Base Risk Assessment

#### Normally associated with management of change:

- 1. When new machinery or plant is employed

2. New procedures, technology or systems of work is incorporated
  3. New substances are introduced
  4. After an accident or a 'near miss'
  5. As new knowledge is gained with regards about hazards
  6. Change in people in the operation
- c. Continuous Risk Assessment (Mini Risk Assessment)**
- i. The most powerful and important form of Risk Assessment
  - ii. Takes places continuously, as an integral part of **day-to-day** management but may not be sophisticated
  - iii. Continuous Risk Assessments may include:
    1. Pre-Start checklists
    2. Critical task analysis
    3. Planned task observations
    4. Inspections
    5. Mini risk assessment
  - iv. This type of Risk Assessment is mainly conducted by first line supervisors.
- d. Risk Assessment Review**
- i. The baseline risk assessment will be conducted to include the entire operation. This will form part of the initial Health, Safety and Environmental Management System and will remain a baseline risk assessment in so far as the operation does not change.
  - ii. The risk assessment will be reviewed, issue based, after an incident, accident, process change, plant or equipment change, substance change or when new facts become evident that should be included in the risk assessment process.
  - iii. The review of risk assessments will be conducted by the person appointed to conduct risk assessments. The process of review must include Health and Safety Representatives and persons with knowledge of the process or plant which need to be evaluated.
  - iv. Steps in reviewing the risk assessment:

1. Review schedule to be put in place with required frequency and/or the Health and Safety Officer or Manager requests review or review takes place after an incident or accident or change management process.
2. Manager designates a committee to conduct the risk assessment.
3. Committee conducts the risk assessment and reports the findings to the Health and Safety Committee at their earliest convenience.
4. The risk assessment is approved by the Health and Safety Committee and implemented after all affected parties have been trained in the new requirements identified in the risk assessment review.

## 7. METHODOLOGY

### Step 1: Initiating the HIRA and selecting the approach for the assessment.

Two principles should be taken in consideration before an assessment is carried out:

- Structure the assessment to ensure that all relevant hazards and risks are addressed.
- When a hazard is identified, the first option should always be to eliminate it.

A number of approaches (and combinations thereof) to risk assessment can be adopted to perform the HIRA.

The approaches to risk assessments at work which are used are normally based upon:

- Observation of the workplace environment (e.g. means of access, conditions of floors; machinery safety; dust and fumes, temperature, lighting; noise; etc.)
- Identification of tasks carried out at the workplace (to identify all tasks so that they are all included in risk assessment).
- Consideration of tasks carried out at the workplace (evaluation of risks from the different tasks).
- Observation of work in progress (check that procedures are as laid down or predicted, and that there are no other risks arising).
- Consideration of patterns of work (to assess exposure to hazards).
- Consideration of external factors that could affect the workplace (e.g. weather consideration for outdoor workers).
- Review of psychological, social and physical factors which might contribute to stress at work, how they interact together and with other factors in the workplace organization and environment.

- Consideration of organization to maintain conditions, including safeguards (e.g. that systems are in place to assess risks from new plant, materials and so on to update information on risks).

### **Step 2: Identify the hazards**

The importance of this element cannot be over emphasised. It is by far the most important element of the risk assessment process and should be performed in a systematic manner.

#### **Gathering and analysis of information before the assessment**

The gathering and analysis of information is an essential task before the risk assessment can start. This would normally be conducted by the Safety Manager and/or Safety Officer responsible for health and safety and it is one of his more important duties. He/she will involve the responsible team for the specific area for the risk assessment process.

The person should assess the types and major underlying causes of past accidents and incidents. It is advisable to also review accident reports and investigations.

#### **During the physical assessment or after the assessment**

The adoption of some systematic way of allowing relevant persons to "see" or "spot" the hazards present in the workplace.

If the hazard identification is not carried out carefully, the subsequent analysis of risk and the development of risk control measures become pointless. The identification of hazards is not only an essential part of the risk assessment process, but also acts very effectively to change the way people think, causing them to act more safely and so become more proactive in hazard awareness. When you work in a place every day it is easy to overlook some hazards. There are many techniques and tools that can be used as part of the hazard identification process, here are some tips to help you identify the ones that matter:

- Observation - walk around your workplace and look at what could reasonably be expected to cause harm.
- Communication - ask your employees what they think. They may have noticed things that are not immediately obvious to you.
- Information - check "manufacturers" instructions or MSDS for chemicals and equipment as they can be very helpful in spelling out the hazards and putting them in their true perspective.
- Records - Have a look at your incident and sickness records – these often help to identify the less obvious hazards.
- Consultation with the workplace health and safety committee and representatives.



- Brainstorm ideas and group under appropriate risk headings. Consider the effects on people (staff, students, communities and other people), information, physical assets and finances, reputation. Write the final list onto the table (risk assessment summary).
- Data from the health surveillance program.
- Minimum standard legislation.
- Analyse specific scenarios, this is mostly a preventative method used for the identification of hazards and is performed by stating or picturing certain possibilities or scenarios and then breaking it down, examining and studying the possible outcome of the event or activity.

**Remember to think about long-term hazards to health (e.g. high levels of noise or exposure to harmful substances) as well as safety hazards.**

**Step 3: Identify all parties affected by the hazard and determine how they can be affected**

Next you need to identify who might be harmed; it will help you identify the best way of managing the risk. That doesn't mean listing everyone by name, but rather identifying groups of people (e.g. people working in the storeroom or primary plant). In each case, identify how they might be harmed, e.g. what type of injury or ill health might occur. You can use the homogenous exposure groups and occupational codes as per the Occupational Hygiene risk assessment to align processes.

**Pay particular attention to vulnerable people.**

**Remember:**

- Some workers might be more vulnerable like new and young workers, new or expectant mothers and people with disabilities, lone workers.
- Cleaners, visitors, contractors, maintenance workers, to name a few, who may not be in the workplace all the time.
- Members of the public, if they could be hurt by your activities.
- If you share your workplace, you will need to think about how your work affects others present. The best way to remember this is through ABBI. Who works or may walk above you, who works or may walk behind you, who works below or may walk below you or who works or may walk in front of you.
- As well as how their work affects your staff – talk to them; and ask your staff if they can think of anyone you may have missed.

**Identify groups or people who may be affected.**

If the risk assessment is job-specific, use the individual's job title, not their name.

**Step 4: Evaluate or assess the risk**

Having identified the hazards, you then have to decide what to do about them. Legislation requires you to do everything "reasonably practicable" to protect people from harm.

**Risk rating**

One of the simplest forms of risk assessment is to rate the remaining risk as high, medium or low, depending on how likely the activity is to cause harm and how serious that harm might be. This is called "Risk rating".

**Level of risk****1. Low risk items**

Need to be considered, but there is a smaller chance that they will cause the entire project to go off the rails. It is most unlikely that harm would arise under the controlled conditions listed, and even if exposure occurred, the injury would be relatively slight.

**2. Medium risk items**

These types of risks are ones that could cause issues, but that there is still a lower chance that they will cause your project to fail. It is more likely that harm might actually occur and the outcome could be more serious (e.g. some time off work, or a minor physical injury).

**3. High risk items**

These are the risks that take the highest priority. They can cause your project to fail, and you need to plan for these risks ahead of time. If injury is likely to arise (e.g. there have been previous incidents, the situation looks like an accident waiting to happen) and that injury might be serious (broken bones, trip to the hospital, loss of consciousness), or even a fatality.

**Risk ranking matrix**

In order to do a "risk rating", we normally make use of a matrix scoring system. Numerical scores are given to the different elements (e.g. consequence, exposure, likelihood) of risks and these scores are added or multiplied to get a rating for the risk.

For the initial risk evaluation, consider the risks identified in the worse-case scenario before any controls are applied.

Example: Electricity is a hazard, it can kill but the risk of it doing so in an office environment is low providing the components are insulated, the metal casing is properly earthed and appliances are used correctly and tested regularly.

**Elements of risk**

### 1. Consequence/ severity (How serious)

Consequences are the expected severity. The severity is expressed in terms of the effect on the person, whether injury or ill health, and ranging from minor injury to death. Think about how serious the likely outcomes would be if harm from a hazard was realized. The risks are clearly higher if an accident is likely to result in serious injury or death, for example, than a bruise or a scratch.

### 2. Probability/ Likelihood (How likely)

By evaluating the risks associated with each hazard you have identified, you're deciding how likely it is that harm will occur from the hazard. The likelihood is the probability of loss when a sub-standard act occurs or sub-standard condition exists.

The likelihood should be based on the worse-case scenario, ranging from a remote possibility to the inevitable. Factors affecting the likelihood include:

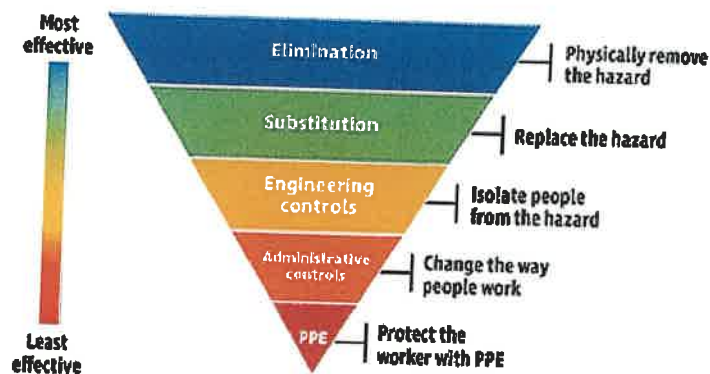
- Number of times the situation or task occurs
- Location of the hazard
- Duration of the exposure
- Environmental conditions
- Competence of the people involved and
- The condition of equipment

### 3. Frequency (How often)

How often is the activity involving the hazard taking place? How many people come into contact with it? Risks are higher when frequency of contact is higher.

### 4. Hierarchy of control to be followed:

#### NIOSH HIERARCHY OF CONTROLS





**8. RESPONSIBILITY**

- 8.1 Manager, Supervisors and Risk Assessor will maintain the procedure and conduct and document the baseline risk assessment process.
- 8.2 Issue based risk assessments are conducted by supervisors and health and safety inspectors.
- 8.3 Continue base risk assessments are the responsibility of supervisors and operators.

**9. RECORDING**

- a. All records of Risk Assessments will be kept in the applicable Health, Safety and Environmental Management filing system in the appropriate file.
- b. Pre-start inspection sheets and registers.

**APPROVED BY:**

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