# Hazard Identification, Risk Assessment and Control

Accidents are preventable, as long as we take a proactive approach to health and safety. By implementing a system of hazard identification and risk control, we can prevent workplace injuries and diseases.

## Responsibilities

The assessment process must be completed before starting any job to identify existing or potential hazards to workers and eliminate or control these hazards through the use of engineering or administrative controls, proper training or the use of personal protective equipment (PPE).

All company staff and contractors are required to take a proactive approach to managing and reporting hazards. When they observe a hazard, they are required to take steps to manage the hazard directly (provided they are adequately knowledgeable and trained to do so safely), eliminate the hazard or get assistance from appropriate persons to do so whenever reasonably possible. Where hazards cannot be eliminated immediately, take necessary steps to warn others of the hazard. Report hazardous or potentially hazardous conditions and acts to a supervisor or your site contact if a contractor.

The hazard identification and risk assessment must be completed by a supervisor and communicated to all workers before beginning the work. The JOHSC and workers also play an important role in the assessment process. Being the hands-on people, they often find the new hazards first and then must stop and report. The JOHSC should review hazard assessments as part of their routine business at meetings to help make sure that the assessments fit with each other and cover all the company activities.

## Step 1: Identify the Hazards

The supervisor is to start the hazard identification process before the job begins by identifying hazards that are known to exist on site and documenting them. By identifying hazards early, the supervisor may be able to implement controls before any workers arrive on site.

To ensure the process is thorough the supervisor should:

* look at all aspects of the work,
* include non-routine activities such as maintenance, repair, or cleaning,
* look at accident / incident / near-miss records, include people who work “off site” either at home, on other job sites, drivers, teleworkers, with clients, etc.,
* look at the way the work is organized or “done” (include experience and age of people doing the work, systems being used, etc),
* look at foreseeable unusual conditions (for example, possible impact on hazard control procedures that may be unavailable in an emergency situation, power outage, etc.),
* examine risks to visitors or the public,
* include an assessment of groups that may have a different level of risk such as young or inexperienced workers, persons with disabilities, or new or expectant mothers.

To identify potential hazards, consider the following questions (this is not a complete list):

* Can any body part get caught in or between objects?
* Do tools, machines or equipment present any hazards?
* Can the worker make harmful contact with objects?
* Can the worker slip, trip or fall?
* Can the worker suffer a strain from lifting, pushing or pulling?
* Is the worker exposed to extreme heat or cold?
* Is excessive noise or vibration a problem?
* Is there a danger from falling objects?
* Is lighting a problem?
* Can weather conditions affect safety?
* Is harmful radiation a possibility?
* Can contact be made with hot, toxic or caustic substances?
* Are there dusts, fumes, mists or vapours in the air?

## Step 2: Assess the Risks

Once you have identified a hazard, evaluate the risks associated with it to determine how best to mitigate the hazard. Ranking or prioritizing hazards is one way to help determine which hazard is the most serious and thus which hazard to control first. Priority is usually established by taking into account employee exposure and the potential for an accident, injury or illness. By assigning a priority to the hazards, you are creating a ranking or action list. The following factors play an important role:

* percentage of workforce exposed
* frequency of exposure
* degree of harm likely to result from the exposure
* probability of occurrence

There is no one simple or single way to determine the level of risk. Ranking hazards requires the knowledge of the workplace activities, urgency of situations, and most importantly, objective judgment. One option is seen in the following two tables:

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|  |
| **Risk Severity Index** |
| **1** |  Level 1  | Fatality OR Property damage exceeding $50,000 |
|  Level 2  | Employee admitted to hospital or probably permanent disability ORProperty damage between $10,000 and $50,000 |
|  Level 3 | Employee not able to perform all of their regular duties OR Property damage between $1,000 and $10,000 |
|  Level 4  | Employee able to perform all their regular duties OR Property damage less than $1,000 |

|  |  |
| --- | --- |
| **Probability Index of Occurrence** | **Example** |
| **2** | A | Likely to occur immediately | Could happen any day |
| B | Probable in time | Likely to happen if conditions are repeated |
| C | Possible in time | Under the right conditions, the incident might be repeated |
| D | Remotely possible | Even under similar conditions, it is unlikely the incident will be repeated |

For the activity being examined, determine the most likely reasonable level of severity (levels 1 through 4 in the above table). Then determine how likely (the probability) the injury would be (letters A–D). For example, being hit by a low speed car is most often a level 2 injury but is barely possible for someone who works a kitchen job (level D). However, put that same person wearing all black on a roadside at night replacing the roadside light bulbs and the probability increases to level A and the severity to 1 (fatality reasonably likely).

The kitchen worker would have a score of 2D on the following table. The table gives a 2D risk as a level 3. Simple rules such as ensuring that kitchen workers have a path to the dumpster that does not involve vehicle traffic would be an example.

The case of the worker all in black at night on the roadside is 1A on the following table – a completely unacceptable level of risk. The worker should do the job in high visibility clothing, in daylight, with traffic control.

|  |  |
| --- | --- |
|  | **Probability of Occurrence** |
| **Potential Severity** |  | A | B | C | D |
| 1 | **1** | **1** | **1** | **2** |
| 2 | **1** | **2** | **2** | **3** |
| 3 | **2** | **2** | **3** | **3** |
| 4 | **2** | **3** | **3** | **4** |

|  |  |
| --- | --- |
| **Risk definitions** | Risk is the chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard. It may also apply to situations with property or equipment loss. |
| 4 — Low | Activities in this category contain minimal risk and are unlikely to occur. Organizations can proceed with these activities as planned. |
| 3 — Medium | Activities in this category contain minor to serious risks that are remotely likely to likely to occur. Application of proactive risk management strategies to reduce the risk is advised. Organizations should consider ways to modify or eliminate unacceptable risks. |
| 2 — High | Activities in this category contain unacceptable levels of risk, including catastrophic and critical injuries that are highly likely to occur. Organizations should consider whether they should eliminate or modify activities that still have a “high” rating after applying all reasonable risk management strategies. |
| 1 — Extreme | Activities in this category should not be allowed to proceed without very careful planning. The company needs to evaluate whether the activity is actually necessary in the first place. |

## Step 3: Control the Risks

Once you’ve identified hazards and assessed the risks, look for ways to control them. Whenever possible the hazard should be removed, or hazard controls should be implemented according to the following hierarchy of controls:

**1. Elimination/substitution** — Remove the hazard from the workplace or replace it with something less harmful.

**2. Engineering controls** — Control the hazard at the source. Examples include machine guards to prevent access, enclosing processes to reduce exposure and ventilation systems.

**3. Administrative controls** — Control the hazard along the path. Implement standard operating procedures, provide training and education to employees, and administer housekeeping and preventative maintenance programs.

**4. Personal protective equipment (PPE)** — The use of PPE is not a stand-alone control because it controls the hazard at the worker. However, PPE used with other control measures can be effective. We will provide employees with equipment to reduce their exposure to workplace hazards as required by the OHS Regulation.

Controls are usually placed:

* At the source (where the hazard “comes from”)
* Along the path (where the hazard “travels”)
* At the worker

**Engineering controls** are controls at the source or along the path.

**Administrative controls** limit workers’ exposure by implementing other “rules”, such as training, supervision, shorter shifts in high risk areas etc. These control measures have many limitations because the hazard itself is not actually removed or reduced. Administrative controls are not generally favoured because they can be difficult to implement, maintain and are not a reliable way to reduce exposure

**PPE** includes items such as respirators, protective clothing such as gloves, face shields, eye protection, and footwear that serve to provide a barrier between the wearer and the chemical or material. It is the final item on the list for a very good reason. PPE should never be the only method used to reduce exposure except under very specific circumstances because PPE may “fail” (stop protecting the worker) with little or no warning. For example: “breakthrough” can occur with gloves, clothing, and respirator cartridges.

Once you have decided on the best and most practical control for a particular hazard is, this needs to be documented. The safe work procedure for the job needs to be written based on those risks and controls. Using the examples from earlier with the car striking a worker, the kitchen work procedure for garbage removal should include something about having the dumpster near the back door to the kitchen and not across the parking lot. It could also include instruction to the worker to ensure that they report any burnt-out exterior lights. Some may add requirements to put on a reflective vest when taking out the garbage at night. The groundskeeper changing light bulbs needs to have a safe work procedure that includes only working during the day, in high visibility clothing and with proper traffic control barriers. Parking a service vehicle in the road ahead of the worker to act as a substantial physical barrier would further reduce the risk.

## Step 4: Communicate the Controls and Train Workers

Once the control has been put into place, the workers need to be trained in how to use it. This applies whether it is an engineering control such as a guard or interlock, an administrative control such as a safe work procedure for cold weather or particular PPE when handling a chemical. Training records and/or documented sign-offs are required to show that the workers have been made aware of the hazards and the controls.

## Step 5: Review Periodically

Repeat the Hazard Assessment process every two years or when site conditions change, when new tasks are added or when new workers join the crew, in order to prevent the development of unsafe working condition.