

Industrial & Management Engineering Department

Industrial Relations

IM 111

Dr Yehia Youssef

Hazard Identification and Prevention

Definitions

Hazard:

- A hazard is anything that can cause harm to people.
- Examples are dangerous chemicals, electricity, an exposed wire , working at heights on ladders, ...etc.

Risk:

- A risk is the likelihood that someone will be harmed by the hazard together with the severity of harm suffered by the injured person.

Risk Assessment:

- Risk assessment is a process carried out in order to measure the extent to which harm may be caused.
- Then precautions must be taken to eliminate or minimize the risk to people or employees.

Hazard Identification and Prevention

The five steps or risk assessment:

1) Identify the hazards

First you need to work out how people could be harmed. When you work in a place every day it is easy to overlook some hazards

2) Decide who might be harmed and how

- For each hazard you need to be clear about who might be harmed; it will help you identify the best way of managing the risk.
- That does not mean listing everyone by name, but rather identifying groups of people (e.g. ‘people working in the storeroom’ or ‘passers-by’).
- In each case, identify how they might be harmed, i.e. what type of injury or ill health might occur.
- For example, ‘shelf stackers may suffer back injury from repeated lifting of boxes’.

Hazard Identification and Prevention

3) Evaluate the risks and decide on precaution

- Having spotted the hazards, you then have to decide what to do about them.
- The law requires you to do everything ‘reasonably practicable’ to protect people from harm.
- You can work this out for yourself, but the easiest way is to compare what you are doing with good practice.
- There are many sources of good practice, for example HSE’s website (www.hse.gov.uk).

Hazard Identification and Prevention

4) Record your findings and implement them

- Putting the results of your risk assessment into practice will make a difference when looking after people and your business.
- Writing down the results of your risk assessment, and sharing them with your staff, encourages you to do this.
- If you have fewer than five employees you do not have to write anything down, though it is useful so that you can review it at a later date if, for example, something changes.
- When writing down your results, keep it simple, for example ‘Tripping over rubbish: bins provided, staff instructed, weekly housekeeping checks’, or ‘Fume from welding: local exhaust ventilation used and regularly checked’.

Hazard Identification and Prevention

- 5) Review your assessment and update if necessary
- Few workplaces stay the same. Sooner or later, you will bring in new equipment, substances and procedures that could lead to new hazards.
 - It makes sense, therefore, to review what you are doing on an ongoing basis. Every year or so formally review where you are, to make sure you are still improving, or at least not sliding back.
 - Look at your risk assessment again. Have there been any changes? Are there improvements you still need to make? Have your workers spotted a problem? Have you learnt anything from accidents or near misses?
 - Make sure your risk assessment stays up to date.

Hazard Identification and Prevention

Hazards Identification

- Hazards can happen at school, on the road, in the street, in a factory, at home, ...etc.
- To be able to identify hazards in a specified situation , you must first be familiar with the risks and dangers that may happen in the particular situation you are dealing with.
- The figure given identifies an accident which may occur due to a falling object and the dangerous situation in case of no accident occurrence.

Hazard Identification and Prevention

In the following we will study the hazards which are associated with:

- Manual handling of heavy loads
- Hazardous substances
- Noise
- Visual display units (VDU) and Ergonomics
- Electricity
- Mechanical equipment

Hazard Identification and Prevention

Hazards	Example	Possible Effects	Prevention and Risk Reduction
Manual handling of heavy loads <ul style="list-style-type: none">• This includes all pushing, pulling, lifting, carrying, putting down or moving any loads involving a risk.	This may include stacking of shelves, pushing shopping trolleys, pulling goods trolleys and lifting loads.	<ul style="list-style-type: none">• Back pain• Muscular pains in both arms and legs• cuts and bruises	<ul style="list-style-type: none">• Use load lifting equipment (e.g. forklifts).• reducing the load weight• Using the correct manner of lifting
Hazardous substances <ul style="list-style-type: none">• This can be any substance, whether it is a solid, a liquid or a gas that may cause harm to you	Paint, glue, cleaning liquid and powders, petrol, chemicals, acids and alkalies, fire lighters	<ul style="list-style-type: none">• This can cause dizziness, nausea, nosebleeds, itchy eyes and skin. Extended exposure may result in asthma or cancer	<ul style="list-style-type: none">• Workplace should be well ventilated• Use PPE• Workers should have full information and training about using hazardous substances

Hazard Identification and Prevention

Hazards	Example	Possible Effects	Prevention and Risk Reduction
Noise Extended exposure to noise may cause permanent hearing loss	Operating equipment or machinery or loud speakers	<ul style="list-style-type: none">• Partial or permanent hearing loss• Deafness	<ul style="list-style-type: none">• Reduce the noise level at source.• Use personal hearing protectors
VDUs and Ergonomics The use of computers for extended periods during the day may cause problems especially if not made to suit worker	A VDU is a computer monitor, a TV screen or a microfiche reader	<ul style="list-style-type: none">• Neck, shoulder arms and back pain• Headaches• Eye strain• Fatigue and stress	<ul style="list-style-type: none">• Screen should be adjusted and positioned to avoid reflection and glaring• Chairs should be adjustable• Levels of light, heat and noise should be convenient/suitable

Hazard Identification and Prevention

Hazards	Example	Possible Effects	Prevention and Risk Reduction
Electricity Electric shock occurs when a person touches live electric wires	Electrocutions may occur when contact is made with live electric circuits	<ul style="list-style-type: none">• Severe shock• Death	<ul style="list-style-type: none">• Equipment should be checked regularly• Broken/frayed wires and apparatus should be repaired or replaced• Electric wiring must be in good condition
Mechanical Equipment Mechanical equipments are tools or devices with moving parts	<ul style="list-style-type: none">• Meat slicer• Floor polisher• Forklift trucks• Lifts• Industrial machinery	<ul style="list-style-type: none">• Open wounds or injuries• Fractures• Death	<ul style="list-style-type: none">• Check the condition of the equipment• Do not use machines without guards• Workers must be well trained• Read the operating manual before using the machine

Hazard Identification and Prevention

Fundamentals of Electric Hazards

- To flow electricity must have a complete path.
- Electricity flows through conductors such as metals, water, and the human body.
- Insulators do not conduct electricity
- The human body is a good conductor

How can you ever been shocked?

- ✓ More than 3 ma : painful shock
- ✓ More than 10 ma: muscle contraction “no-let-go” danger
- ✓ More than 30 ma: lung paralysis – usually temporary
- ✓ More than 50 ma: possible ventricular fibrillation (heart dysfunction, usually fatal)
- ✓ 100 ma to 4 amps: certain ventricular fibrillation (fatal)
- ✓ Over 4 amps: heart paralysis, severe burns. Usually caused by > 600 volts.

Hazard Identification and Prevention

Hazards of Electricity

- Electrocutation/Shock/Burns/Death.
- Minimum distance from overhead lines 10 ft.
- Inspect all electric tools and equipment.
 - Frayed, cut or broken wires
 - Grounding prong missing
 - Improper use of cube taps
 - Improperly applied or missing strain relief

➤ Distance

If you sense the presence of an electrical hazard or exposed conductor that may be energized, keep your distance and **STAY AWAY**

Electricity Hazards

