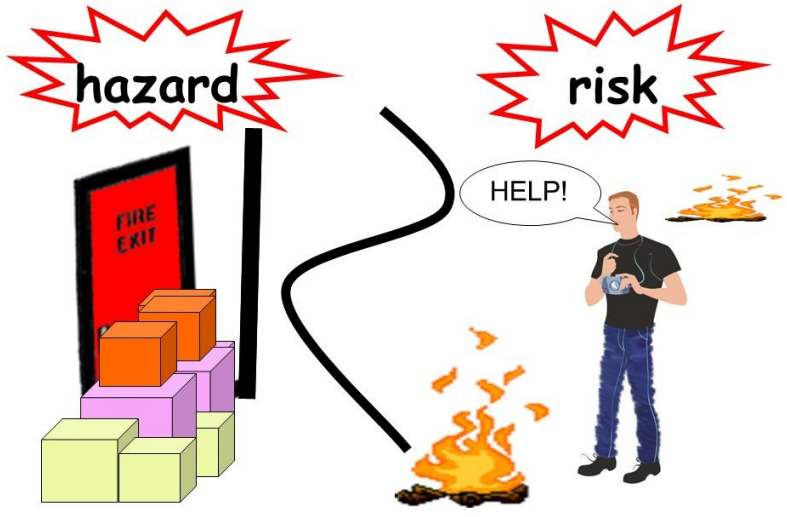

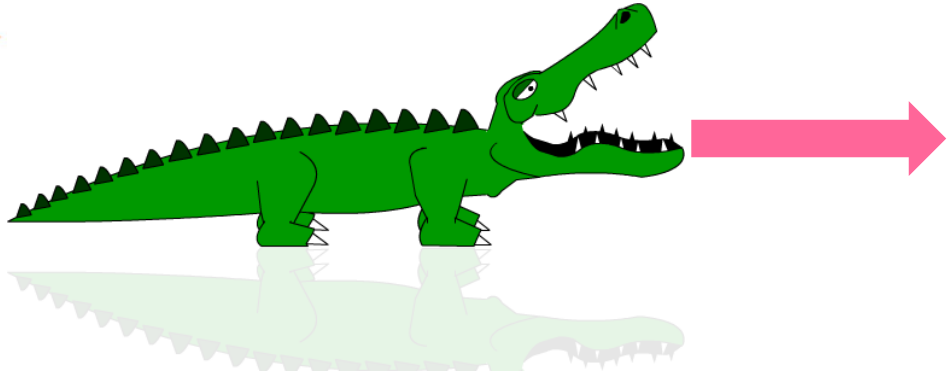

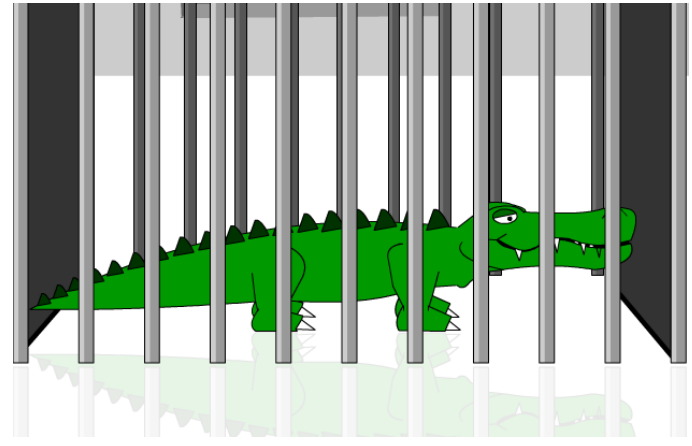

Tools to Improve Health & Safety

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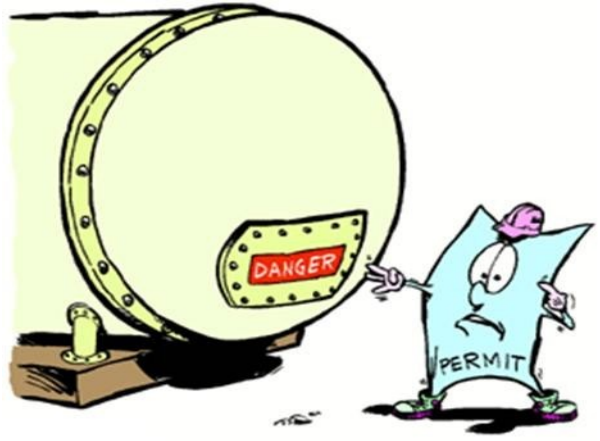
Tools to Improve Health & Safety

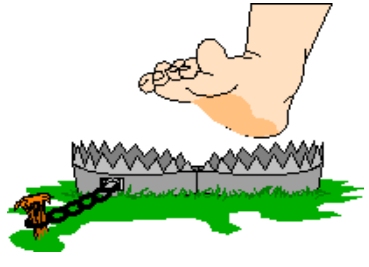
- ✓ Risk Assessment
- ✓ Safe system of work
- ✓ Permit to work system
- ✓ Hierarchy of Control



Hazard:

Something with the potential to cause harm such as:

- A source – working at height
- A substance – handling of chemicals
- A part of a machine – circular saw blade
- A method of work – lifting method
- A form of energy, or a situation – overburden on the edge of excavation

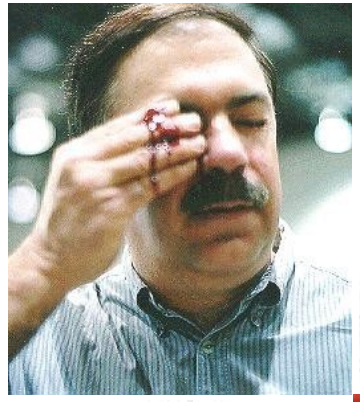


Harm:

Includes death, injury, physical or mental ill health, damage to property or the environment, loss of production or any combination of these.

Risk:

A measure of the **likelihood** that the harm from a particular hazard will occur, considering the possible **severity** of the harm.



- **Risk** is expressed as:

Risk = Likelihood of Occurrence × Severity of Hazard

Results are expressed in term of quantity such as:

high risk, medium risk and low risk.

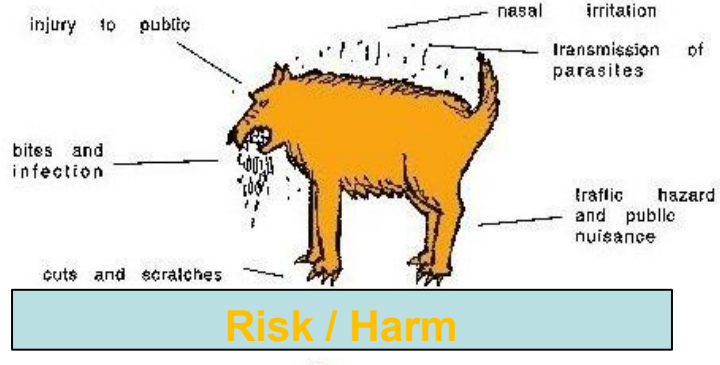
Risk Assessment

- Risk Assessment is the process of **identifying** and **evaluating** a hazard to determine the **level of action** required to **reduce a risk** to an acceptable level.

✓ The control of risks is essential to secure and maintain a healthy and safe workplace which complies with the relevant legal requirements.

✓ Risk control concerns with the principles that should be adopted in order to eliminate or control both acute and chronic risks to the health and safety of people at work.

✓ As an employer, you have a legal health and safety responsibility to identify and control workplace hazards and risks.



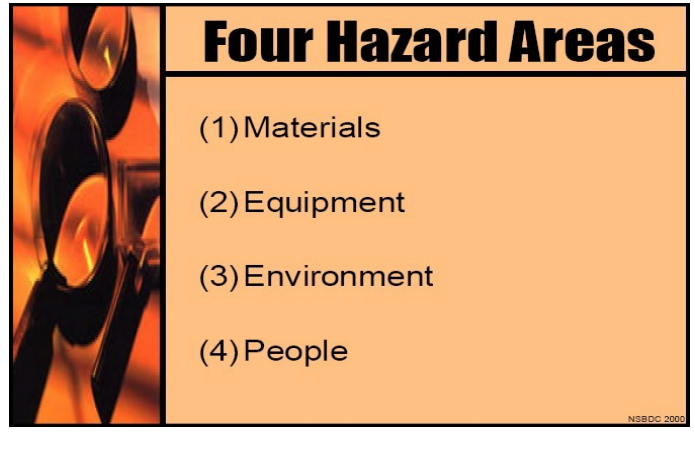
How to do a Risk Assessment?

FIVE steps to RISK ASSESSMENT:

Hazard Identification → **Decide who might be harmed and in what circumstances** → **Evaluate the risks, and the adequacy of existing controls** → **Record the significant findings** → **Review the assessment**

1.Hazard Identification:

- Hazard type – Physical, Chemical, Biological, Ergonomic
- Hazard Sources – Materials, Equipment, Environment, People
- Hazard identification techniques – Workplace inspection, Manufacturer instruction, MSDS



How to do a Risk Assessment?

2. Decide who might be harmed and in what circumstances:

- Include visitors, public and new workers

3. Evaluate the risks, and the adequacy of existing controls:

- Consider the likelihood and severity
- See the adequacy of existing control
- Consider legal requirements, generally accepted industry standards
- Make the risk smaller

4. Record the significant findings

5. Review the assessment:

- In case of new machine, substances and procedure introduced
- New legal requirements

Likelihood : How Likely Are The Consequences?

The chance of an event actually occurring. **Likelihood** of the hazardous event occurring;

- **Very Likely**
- **Likely**
- **Unlikely**
- **Highly Unlikely**

When evaluating the likelihood of an accident, a factor that will modify the likelihood category, is **exposure**. **Exposure** is a measure of how often or how long a person is actually exposed to a hazard.

Some examples are:

- **Very Rare** -- Once per year or less
- **Rare** -- A few times per year
- **Unusual** -- Once per month
- **Occasional** -- Once per week
- **Frequent** -- Daily
- **Continuous** -- Constant

Consequences

Consequence is a measure of the expected **severity** should an accident occur. When assessing the consequences of an accident, the most severe category one could reasonably expect to result from that accident should be selected.

The consequences of an event can be categorised as follows: -

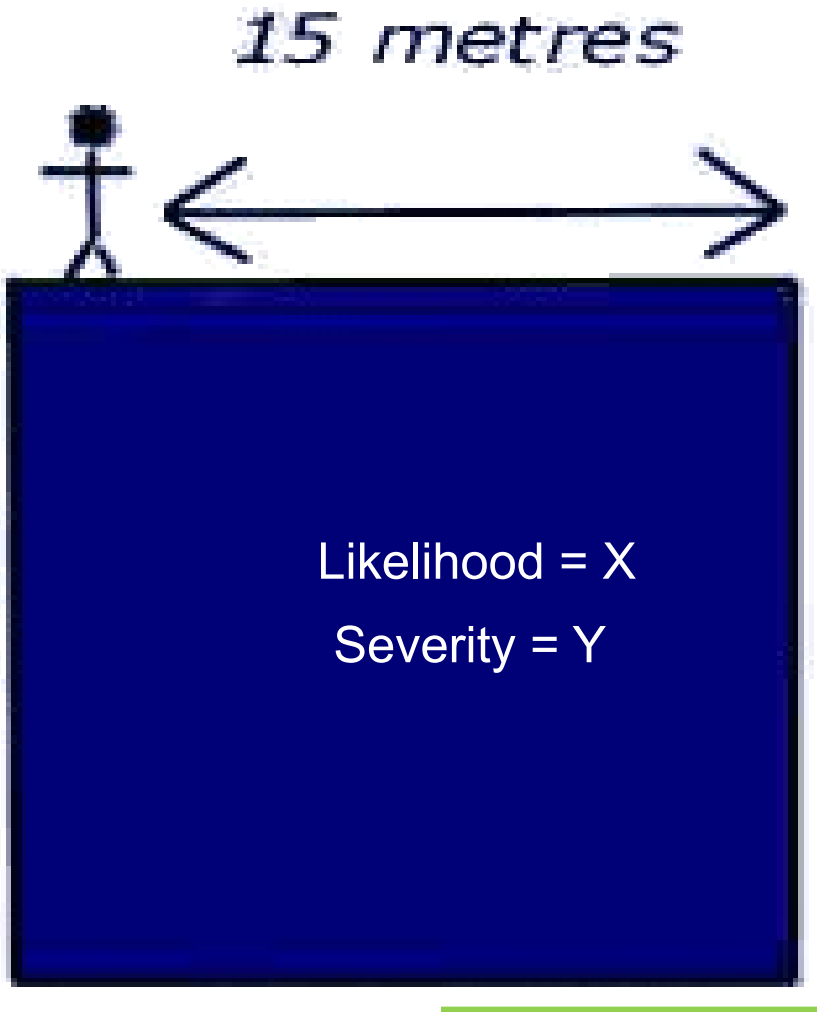
1. **Fatal:** Death
2. **Major Injuries:** Normally irreversible injury or damage to health requiring extended time off work to effect best recovery.
3. **Minor Injuries:** Typically, a reversible injury or damage to health needing several days away from work to recover. Recovery would be full and permanent.
4. **Negligible Injuries:** Would require first aid and may need the remainder of the work period or shift off before being able to return to work.

Risk Assessment Table

CONSEQUENCE	LIKELIHOOD			
	Very Likely	Likely	Unlikely	Highly Unlikely
Fatality	HIGH	HIGH	HIGH	MEDIUM
Major injuries	HIGH	HIGH	MEDIUM	MEDIUM
Minor injuries	HIGH	MEDIUM	MEDIUM	LOW
Negligible injuries	MEDIUM	MEDIUM	LOW	LOW

Example – Working at Height

The probability of falling off an edge is more likely the closer you are working to it



Likelihood = X+X+X

Severity = Y

SEVERETY = Unchanged

Sample of RISK ASSESSMENT

RISK ASSESSMENT		
TITLE OF THE ACTIVITY: Working on Fixed scaffold		
RA ref: AMANA/HSE/RA/FIN/009		
ASSESSOR: Risk Assessment Committee	Assessed Date – 13/10/2009	Reviewed Dated:

HAZARDS	HAZARD EFFECT	RISK RATING SCORE L	S	Risk Rating	CONTROL MEASURES	RESIDUAL RISK	Action By Whom
Fall from height while climbing the scaffold.	Fatality/serious injury	4	6	24	• Access the scaffold through ladder only. • Do not access the scaffold-by climbing scaffold members. • Make sure that all ladders are extended in the work platform and tied/secured properly. • Check bottom of the shoe for any oily/slippery substances. • Do not climb ladders while carrying material. Use lifting rope/tool pouch.	1x6=6	
Fall from scaffold platform.	Fatality/serious injury	4	6	24	• Make sure that the planks are secure and are of sound quality. • DO NOT work on the platform if guard rails (TOP RAIL/MID RAIL/TOE BOARDS) are missing. • DO not lean out from the platform. • DO not access windows/building edges from the scaffold until safe access is made and tagged. • Tie your safety harness always once you reach your position on the work platform and start working. • Report if there is any gap/loose plank on the working platform and rectify the same.	1x6=6	
Overhead electricity	Electrocution/Burn	3	6	18	• Always look for any electrical source around. • Refer RA on electrical installation.	1x6=6	
Fall of materials	Fatal injury and property damages	4	6	24	• Do not keep loose material at the edge. • Do not over stack materials. • Clean all the waste materials from the scaffold platform. • Ensure toe boards are available. • Overhead protection to be ensured to prevent fall of material from top. • Barricade the area below the scaffolding.	1x6=6	

Likelihood (L)		Severity (S)		Risk Rating (Lx S)	
1	Very unlikely	1	Negligible	1 – 7	Low (Acceptable)
2	Unlikely	2	First-aid		
3	May happen	3	Minor injury	8 – 16	Medium (Unacceptable)
4	Likely	4	Major		
5	Very likely	5	Severe	17- 36	High
6	Certain or imminent	6	Fatality		

Risk Rating		Likelihood					
		1	2	3	4	5	6
Severity	1	1	2	3	4	5	6
	2	2	4	6	8	10	12
	3	3	6	9	12	15	18
	4	4	8	12	16	20	24
	5	5	10	15	20	25	30
	6	6	12	18	24	30	36

Severity of harm:

Severity is the degree or extent of injury or harm caused by the hazards, or as a result of an accident

Term	Injury type	Value
Negligible	Minor injury requiring no first-aid, no loss of materials	1
Firs-Aid Injury	First-aid treatment required, no further loss of time	2
Minor Injury	Injured person resumes his duties within 3 days.(< 3 days)	3
Major Injury (LTI)	Major injury per event resulting in LTI (> 3 days).	4
Severe	Multiple major injuries, single severe/ disabling injury or occupational illness	5
Fatality	Single or multiple fatality per event	6

Likelihood of harm:

Likelihood / Probability of occurrence of an accident or incident or ill health.

Value	Status	Description
6	Certain or imminent	Constant exposure - Happens regularly on this site
5	Very likely	Workers expected to use control measures every time (say PPE)
4	Likely	Workers expected to adjust control measures every time
3	May happen	Control measures may break down, e.g., machinery or other workers not taking required action
2	Unlikely	Multiple control measures where failure of one does not create harm
1	Very unlikely	Control measures unlikely to break down or be easily removed

Risk Rating:

High (17-36)	Review urgently required to determine whether the risk can be removed or reduced, or the controls improved
Medium (8-16)	Risks not acceptable, hazards and controls need investigation to consider reasonably practicable improvements
Low (1-7)	Acceptable

Safe System of Work

"A safe system of work is a formal procedure (Safety Plan, Operation control procedures, general procedures) which results from a systematic examination of the task in order to identify all the hazards.

It defines safe methods to ensure that hazards are eliminated, or risks minimised."

To Develop a Safe System of Work:

1. Analyze the task

   MEEP (Materials, Equipment and Plant, Environment, People)

2. Implement the system

3. Monitor the system

Safe System of Work Sample

Title of Task:	Free Weights and Squat Racks and Multi Station.
Site	Andover Leisure Centre
Procedure Number:	SSOW 56

Key Points:
•

Equipment required		
General	Chemical	PPE
• Cloth	• Hyphene	• Gloves

Procedure:

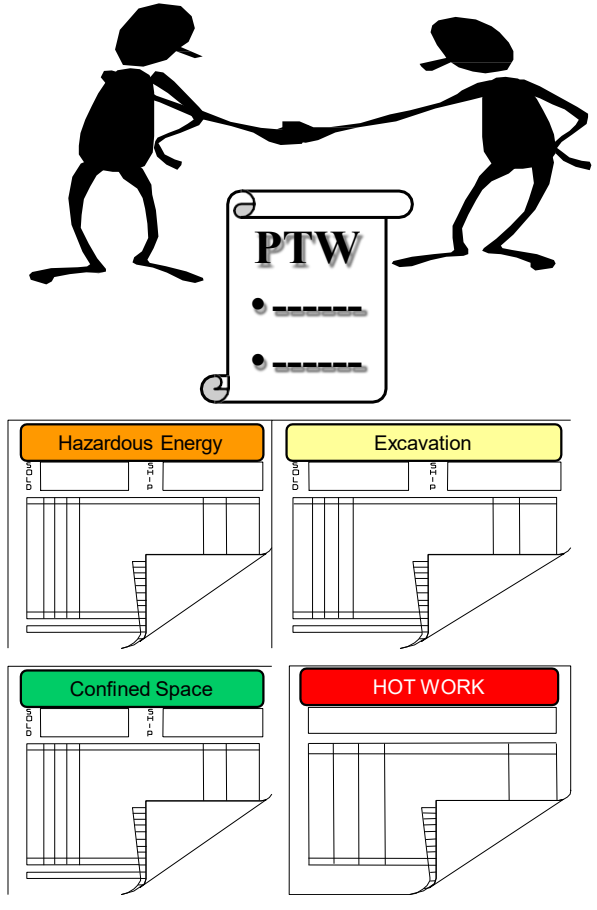
1. Take the equipment required from the cleaning cupboard
2. Dilute the chemical as per instruction
3. PPE is to be worn at all times whilst using the cleaning materials
4. Wipe over all equipment using a cloth ensuring dust marks and sweat are removed.
5. go over with a damp cloth to remove any excess chemical

Permit to work

A PTW, part of safe system of work is a documented control system requiring written confirmation that certain actions have been carried out to eliminate or control the risks before a significant high-risk activities.

High risk activities include:

- Excavation
- Hot work
- Confined space entry
- Live working
- Hazardous areas
- Maintenance operations
- Pressurized systems

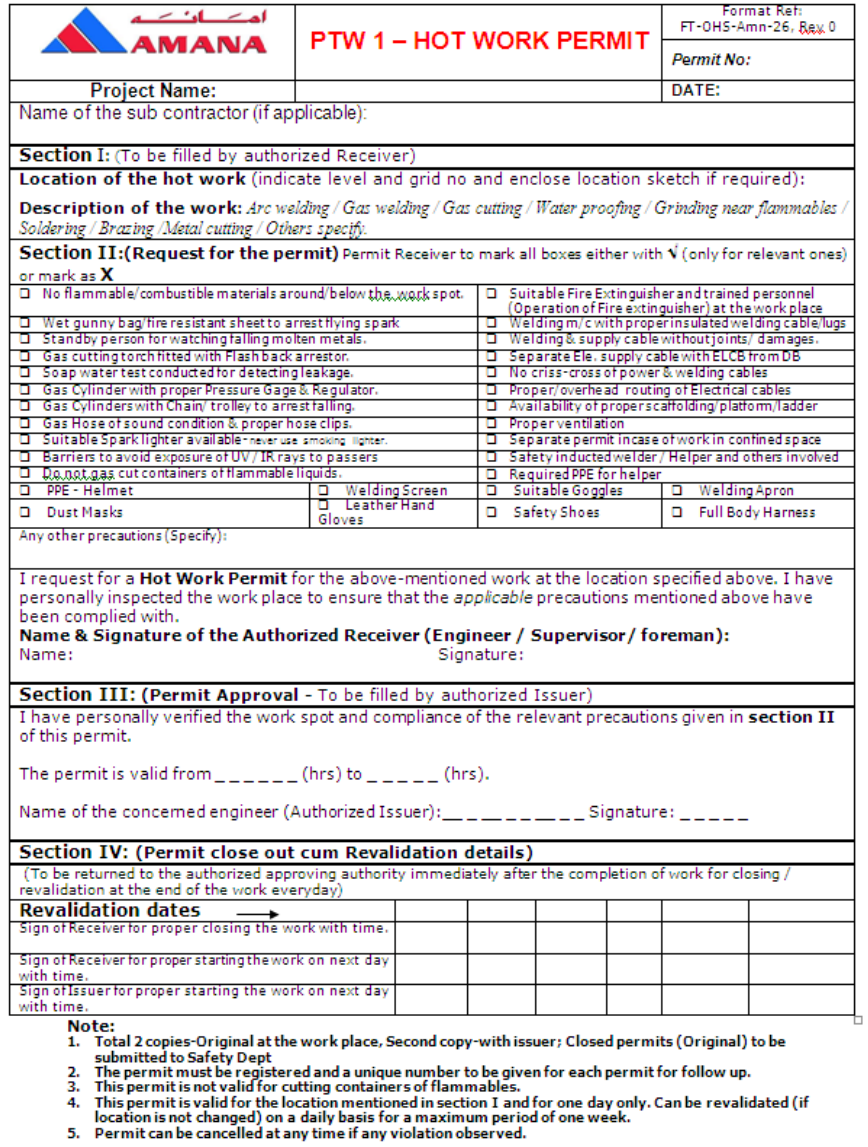


Format of a Permit to Work

- Issue
- Receipt
- Clearance and return to service
- Cancellation
- Extensions / Revalidation

Permit Issuer: One who is authorized to issue PTW, he must attend the required safety trainings and approved by Project Manager. Project / Site Engineer can be a PTW Issuer.

Permit Receiver: One who is authorized to receive PTW, he must attend the required safety trainings and approved by Project Manager. Foreman/Technician can be a PTW Receiver.



AMANA	PTW 1 – HOT WORK PERMIT	Format Ref: FT-OHS-Amn-26, Rev 0
		Permit No:
Project Name:		DATE:

Name of the sub contractor (if applicable):

Section I: (To be filled by authorized Receiver)

Location of the hot work (indicate level and grid no and enclose location sketch if required):

Description of the work: *Arc welding / Gas welding / Gas cutting / Water proofing / Grinding near flammables / Soldering / Brazing /Metal cutting / Others specify).*

Section II:(Request for the permit) Permit Receiver to mark all boxes either with √ (only for relevant ones) or mark as **X**

❑ No flammable/combustible materials around/below the work spot.		❑ Suitable Fire Extinguisher and trained personnel (Operation of Fire extinguisher) at the work place	
❑ Wet gunny bag/fire resistant sheet to arrest flying spark		❑ Welding m/c with proper insulated welding cable/lugs	
❑ Standby person for watching falling molten metals.		❑ Welding & supply cable without joints/ damages.	
❑ Gas cutting torch fitted with Flash back arrestor.		❑ Separate Ele. supply cable with ELCB from DB	
❑ Soap water test conducted for detecting leakage.		❑ No criss-cross of power & welding cables	
❑ Gas Cylinder with proper Pressure Gage & Regulator.		❑ Proper/overhead routing of Electrical cables	
❑ Gas Cylinders with Chain/ trolley to arrest falling.		❑ Availability of proper scaffolding/ platform/ladder	
❑ Gas Hose of sound condition & proper hose clips.		❑ Proper ventilation	
❑ Suitable Spark lighter available- never use smoking lighter.		❑ Separate permit incase of work in confined space	
❑ Barriers to avoid exposure of UV/ IR rays to passers		❑ Safety inducted welder/ Helper and others involved	
❑ Do not gas cut containers of flammable liquids.		❑ Required PPE for helper	
❑ PPE - Helmet	❑ Welding Screen	❑ Suitable Goggles	❑ Welding Apron
❑ Dust Masks	❑ Leather Hand Gloves	❑ Safety Shoes	❑ Full Body Harness

Any other precautions (Specify):

I request for a **Hot Work Permit** for the above-mentioned work at the location specified above. I have personally inspected the work place to ensure that the *applicable* precautions mentioned above have been complied with.

Name & Signature of the Authorized Receiver (Engineer / Supervisor/ foreman):

Name: Signature:

Section III: (Permit Approval - To be filled by authorized Issuer)

I have personally verified the work spot and compliance of the relevant precautions given in **section II** of this permit.

The permit is valid from _____ (hrs) to _____ (hrs).

Name of the concerned engineer (Authorized Issuer):_____ Signature: _____

Section IV: (Permit close out cum Revalidation details)

(To be returned to the authorized approving authority immediately after the completion of work for closing / revalidation at the end of the work everyday)

Revalidation dates →						
Sign of Receiver for proper closing the work with time.						
Sign of Receiver for proper starting the work on next day with time.						
Sign of Issuer for proper starting the work on next day with time.						

Note:

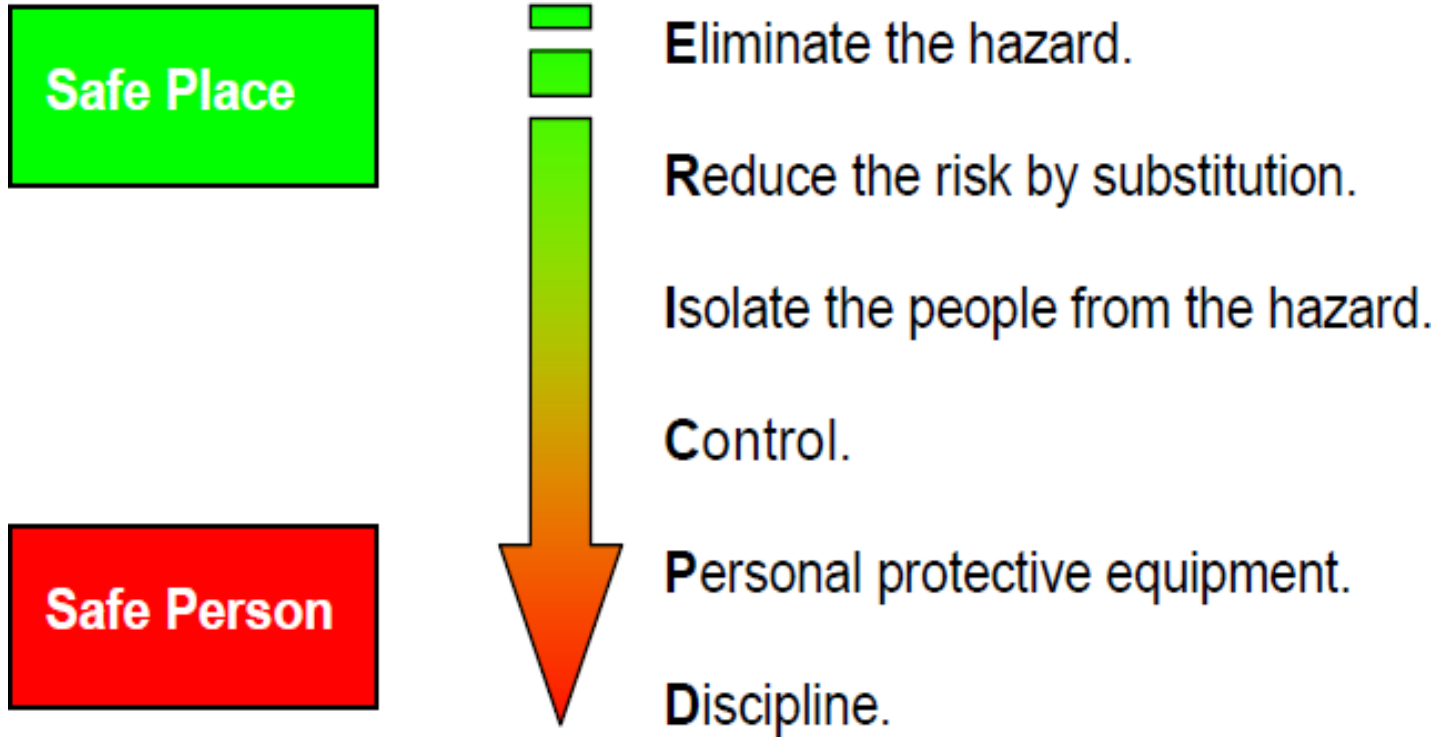
1. **Total 2 copies-Original at the work place, Second copy-with issuer; Closed permits (Original) to be submitted to Safety Dept**
2. **The permit must be registered and a unique number to be given for each permit for follow up.**
3. **This permit is not valid for cutting containers of flammables.**
4. **This permit is valid for the location mentioned in section I and for one day only. Can be revalidated (if location is not changed) on a daily basis for a maximum period of one week.**
5. **Permit can be cancelled at any time if any violation observed.**

General Hierarchy of Risk Assessment

- The detailed management strategy identified in the principles of prevention and is used specifically in the RISK ASSESSMENT to decide the most effective measures in a particular situation.

- **The H&S measures should be considered in the following order of priority:**

ERIC Prevents Death
(a useful memory aide)



The Hierarchy of Risk Assessment (E R I C Prevents Death)

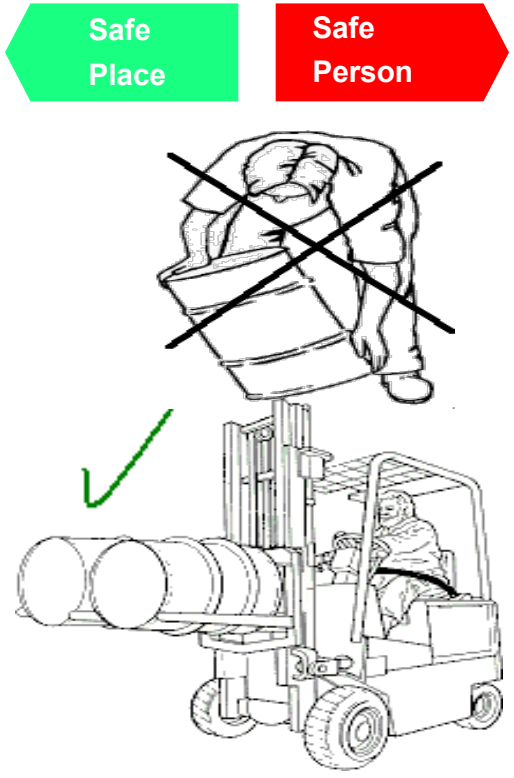
1. **Eliminate** the Hazards:

Eliminate the task, e.g.;

- Buying a readymade components instead of homemade

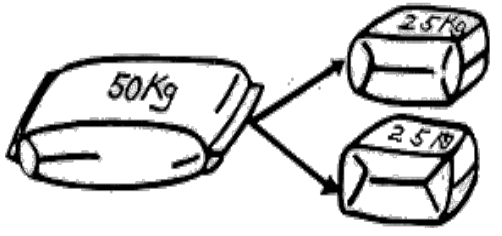
Eliminate the hazard, e.g.;

- Using water instead of solvent based paints,
- Using mechanical lifting instead of manual lifting.



2. **Reduce** the Risk:

- Using 110 V electrical equipment instead of 240 V,
- Substituting a solvent based adhesive with water-based adhesive.
- Making 2 loads of 25 kg instead of one load of 50kg.



The Hierarchy of Risk Assessment (E R I C Prevents Death)

3. **Isolate** the hazard and people

Safe Place

Safe Person

Isolate the hazard i.e., by enclosing or containing it. e.g.

- Guarding dangerous part of machine
- Enclosing noisy part of machine

Segregate the people i.e., keep the people away from the hazard e.g.;

- Erecting barriers around excavation
- Fitting guardrails to scaffolds

The Hierarchy of Risk Assessment (E R I C Prevents Death)

4. Control:

Safe Place

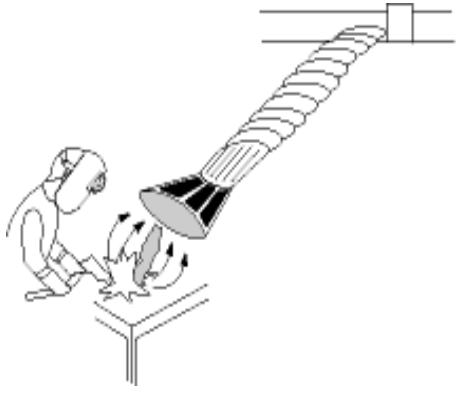
Safe Person

Engineering control i.e. using engineering design to reduce the risks e.g.;

- Local exhaust ventilation to remove contamination

Changing work pattern or method e.g.; developing job rotation systems to reduce exposure;

- Using noisy machine for short time only each day.
- Providing exclusion zones to reduce the number of person exposed to a hazard.



The Hierarchy of Risk Assessment (E R I C Prevents Death)

Safe Place | Safe Person

5. PPE: This is least effective means of controlling hazards

- **All other options should be considered first** and should be arranged wherever possible PPE may then be used as a means of protecting from the risks that remain or as a back up to the measures provided.

- Giving **priority** to **Collective protective measures** over **protective individual measures**. e.g.;

  -local exhaust ventilation systems rather provision of PPE (only)

6. Discipline: Discipline refers to the discipline of the individual workers to follow the system of work in place and their training. e.g.; Obtain compliance with rules and following procedures.

Thanks