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TRUSTED WORLDWIDE

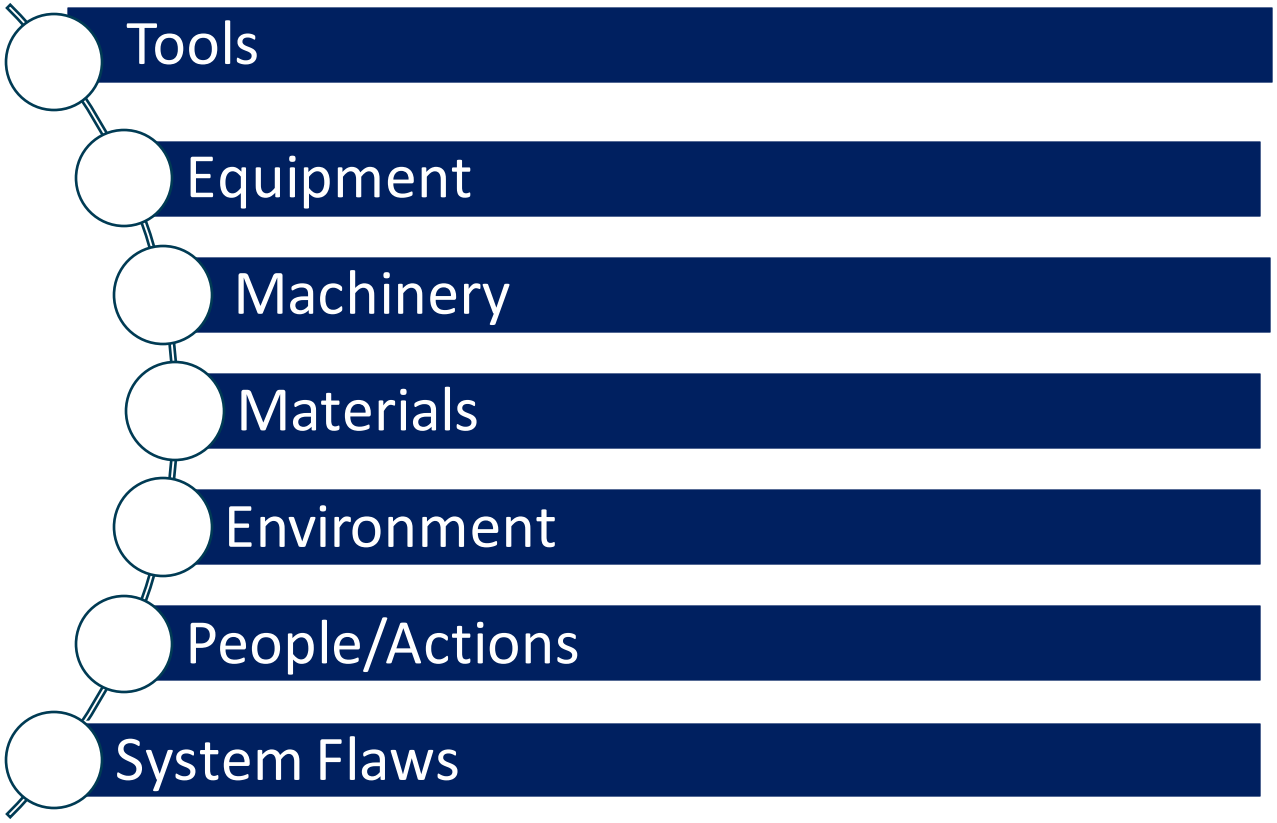
Hazard Identification

Agenda

- What is a Hazard?
- Exposure
- Sources of Hazards
- Risk
- Recognition
- Evaluation
- Elimination
- Questions/Answers

Hazard

A hazard is any source of potential damage, harm or adverse effects on something or someone under certain conditions.



Hazard

Hazards are an inherent component of the workplace whether we recognize them or not.

Some are easy to spot and are known by almost everyone in the workplace.

Other hazards, like chemical hazards, are not so easy to identify.

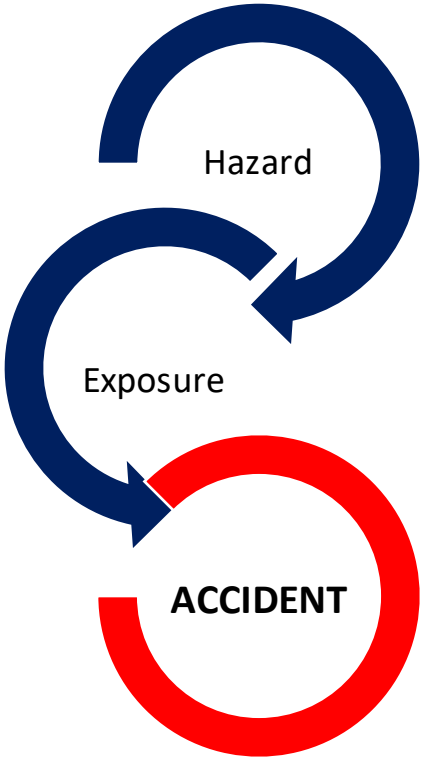
And of course there is the ergonomic group of hazards which is the largest group of all.

Hazard Wheel

Exposure

A **hazard** only describes the initial conditions for accidents on the jobsite.

- It takes **hazard** and **exposure** before an accident can occur
- **Exposure** is when you are at risk from a hazard



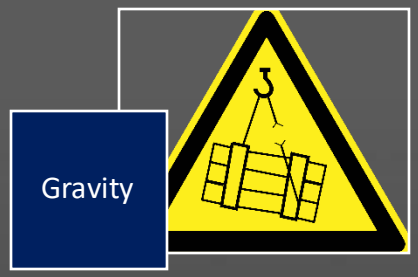
3 Forms of Exposure

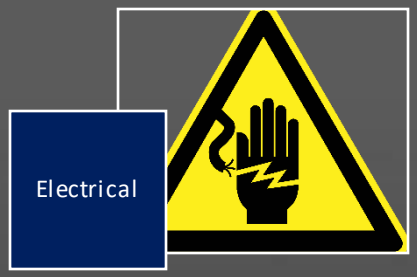
Physical Exposure
your proximity to a danger zone

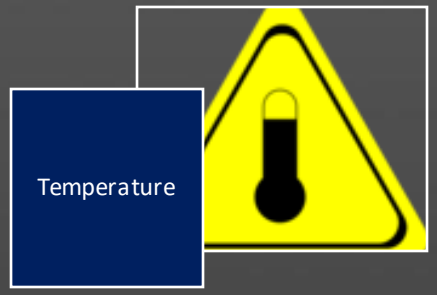
Environmental Exposure
regardless of the distance from the source

Potential Exposure
The possibility that you could be exposed

Sources of Hazards







Gravity

Gravity is the source of attraction by which universal bodies fall toward the center of the earth

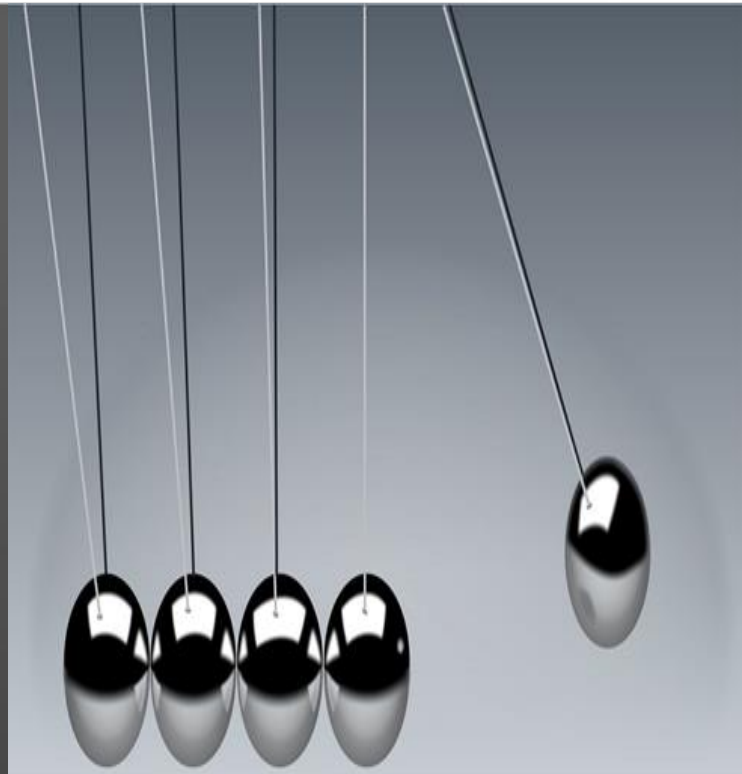
Motion

Motion is the action or process of moving or changing place or position

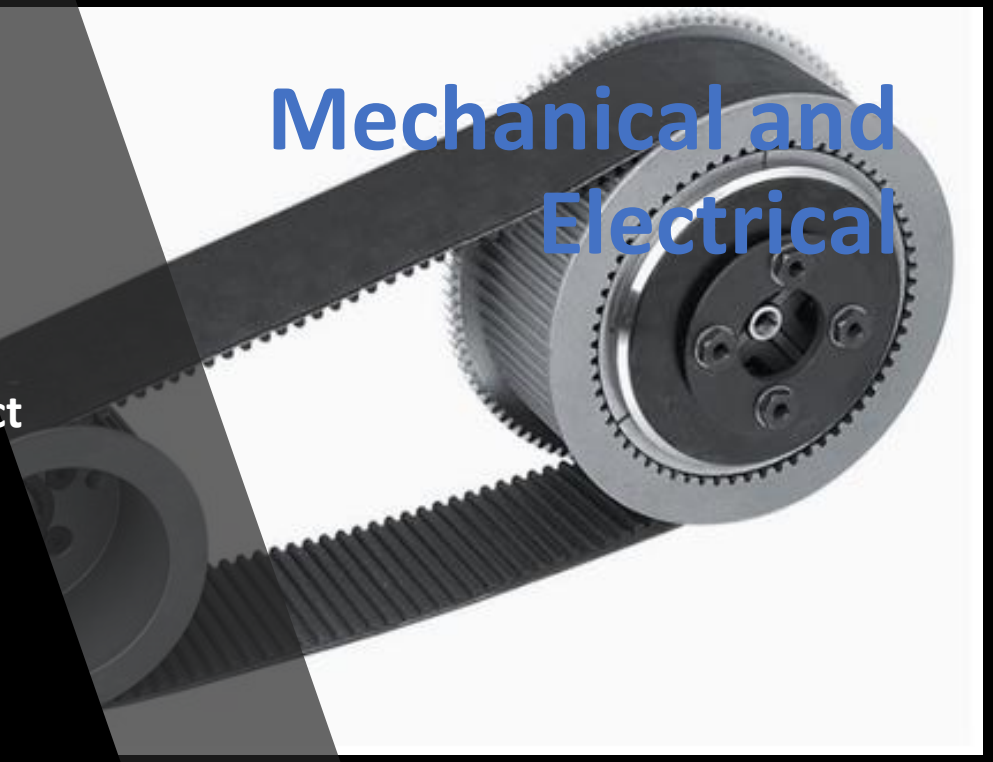
Car moving down the road

Flowing water

Bending/Lifting



Mechanical and Electrical



Mechanical energy is the energy of an object due to its motion or position.

Examples:

- **Conveyer belt**
- **Grinder**
- **Ferris wheel**

Electrical energy is the presence and flow of an electric charge:

Examples:

- Transformers
- Static electricity
- Wiring
- Lightning

Temperature and Biological

Temperature is the degree of heat or cold of a body, substance or medium. – Fire – Nitrogen – Steam – Sun

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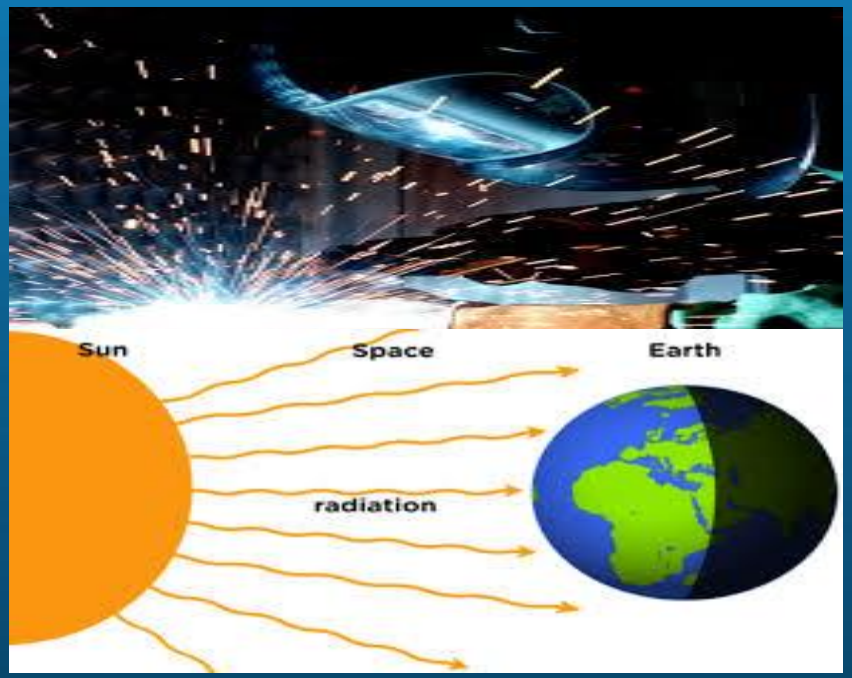
Biological energy is the energy transactions in living organisms:
Bacteria, Viruses, Animals and Contamination

Chemical and Pressure

Chemical energy is when a substance undergoes a change through a chemical reaction. – Burning coal – Car running off gas – Natural gas as heat source – Corrosives.

Pressure is the continuous physical force exerted on or against an object by something in contact with it: compressed cylinders – hoses - hydraulic equipment

Radiation and Sound



Radiation is the particles or electromagnetic waves (energy) emitted by the atoms of radioactive sources and naturally occurring radioactive materials (NORM). – Welding arcs – Microwaves – X-rays

Sound is physical waves travelling through a medium (air or water) that cause a vibration to impact your eardrum. – High pressure release – Jack hammer – Whisper

Risk

A risk is the chance or probability that you will be harmed or injured if exposed to a hazard.

Factors that influence the degree of risk:-

- How much a worker is exposed to a hazardous condition
- How the worker is exposed
- How severe are the effects under the conditions of exposure

Involved in all work-related operations

- Requires decisions that include risk assessment and management
- Identify risk through knowledge, experience, and job requirements

Risk Management

Risk management is a proactive means to eliminate or lessen the threat of hazards.

You ***manage*** risk whenever you ***modify*** the way you do something to minimize your chances of injury or loss as small as possible.

Reduce or eliminate hazards anytime there are changes to work activities

- Applies to routine changes, such as scheduled maintenance and planned modifications, and non-routine changes
- The purpose of specialized procedures is to comply with regulations, communicate work activities, and aid the prevention of accidents and releases

Recognition

The first step is Recognition: In many cases hazards are obvious, in others they are not.

Examples of those not so obvious:

Chemicals – Many chemicals are unseen such as gases, H2S, Benzene etc.

Hazards, like chemical hazards, are not so easy to identify.

And of course, there is the ergonomic group of hazards which is the largest group of all.

Identifying Hazards

Hazard identification is the systematic observation of unsafe conditions, negative behaviors and weaknesses within the management structure that could lead to injuries and illnesses in the jobsite.

Analyzing Hazards

Determine the nature of the hazard

Processes may include :-

– Safety inspections and audits

– Observations

– Pre-job reviews - JSA's

– Incident and accident analyses/Root cause investigation

Safety inspections and audits

Safety inspections and audits examine conditions in the workplace by:

- Identifying hazards
- Evaluating the quality of program design and performance
- Ensuring continuous improvement in:
  - Training
  - Resources
  - Enforcement
  - Supervision
  - Leadership

Observations

Informal:

Spot unsafe or inappropriate behaviors and hazardous conditions while conducting daily tasks . All employees can use their Stop Work Authority if they see a task that maybe unsafe.

Formal:

Policies, procedures and events used as tools for gathering and analyzing data to improve overall safety including JSA's Permit to Work etc.

Pre-job review (Job Hazard Analysis)

A pre-job review examines hazards associated with a specific job

- Separate the job into basic steps
- Analyze each step to identify potential and actual hazards
- Develop safe job procedures known as – Job safety analysis (JSA) – Job hazard analysis (JHA) – Job safety environmental analysis (JSEA)

			LIKELIHOOD		
			VERY LIKELY	POSSIBLE	UNLIKLEY
			3	2	1
SEVERITY	MAJOR INJURY	3	9	6	3
	MINOR INJURY	2	6	4	2
	TRIVIAL	1	3	2	1

JSA/JHA

A process of systematically identifying hazards by breaking down a particular job into a series of relatively simple steps.

- To eliminate hazards and risks before accidents occur
- Analyze job specific hazards
- Prevent workplace injuries and illnesses
- Improve job planning
- Establish proper procedures
- Recognize potential hazards
- Assure good communication
- Commit to safety and health

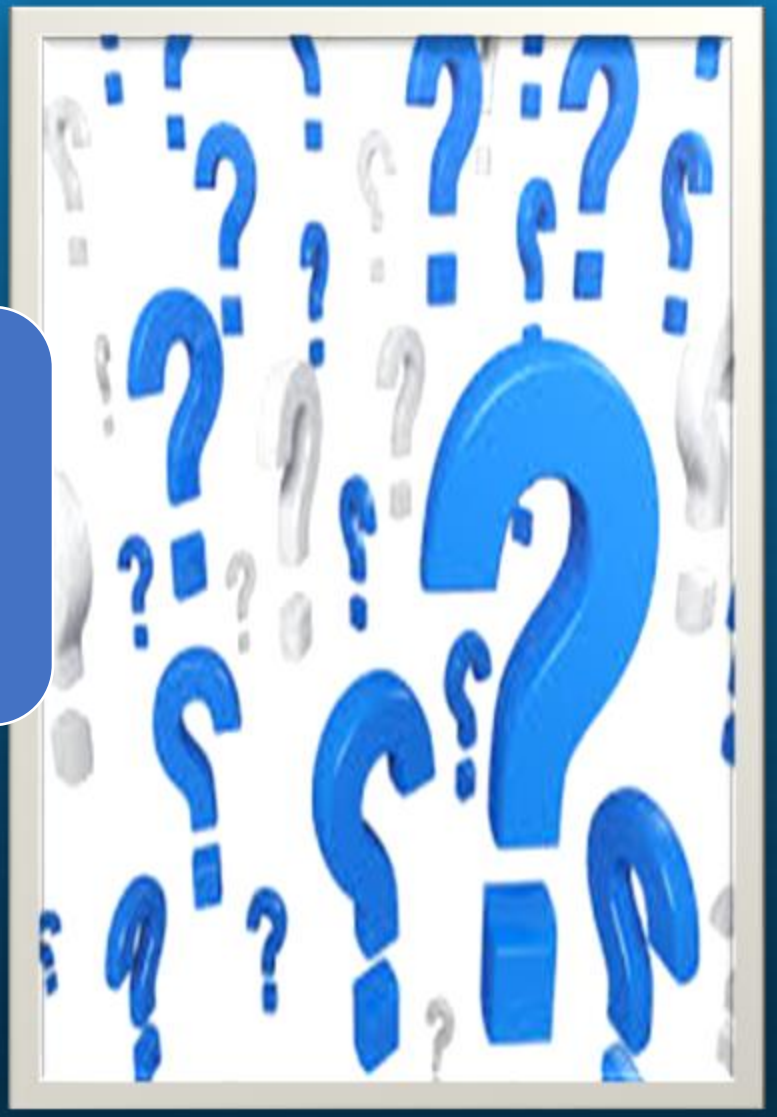
Evaluation

Is The Risk Acceptable?

Can We Control It?

How Can We Evaluate Risk?

- Experience
- Scientific Measurements
- Outside Consultants



Elimination/Substitution Controls

Elimination- the ultimate form of control - Can we eliminate a process, substance, or activity?

Examples:

- Combustible to non-combustible material
- Eliminate material handling
- Remove sharp edges, protruding objects

Substitution- Can we substitute a chemical or activity for a less hazardous one?

Ask a series of "Can We" questions:

Can we have a toxic substance supplied in a different form?
Can we have a toxic substance supplied in a lower concentration? (59% vs 85%)

Unfortunately, Elimination and Substitution are only practical and fully effective in dealing with some hazardous situations so we must use Administrative and Engineering Controls also.

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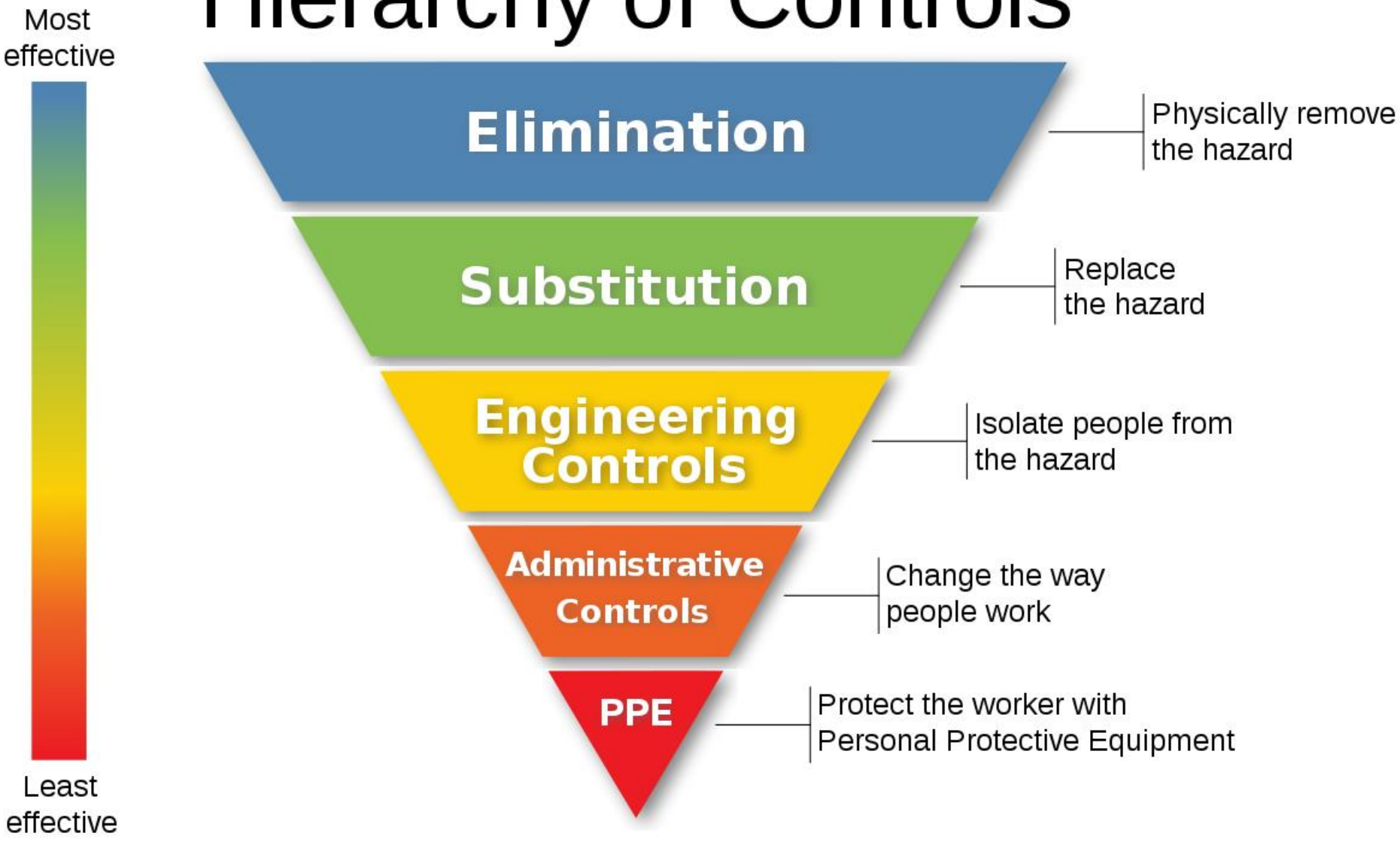
Hierarchy of Controls



Administrative/ Engineering Controls

Administrative Controls:

1. Establish procedures.
2. Monitoring of Contaminants.
3. Organizing Hazardous Operations when small numbers of people are present. (e.g., between shifts or after working hours)
4. Rotation of workers to reduce exposure to a particular hazard.

Engineering Controls:

1. General design of workplace, plant or equipment.
2. Installation of additional lighting.
3. Use of automation and mechanical devices.
4. Isolation- isolate hazardous activities from large groups of workers. (e.g., storage of materials, noise enclosure, guards, warning devices and interlocks. Containment- Remove contaminants by air movers-" containing the hazard at its source."
5. Limitation- Limit the effect of a potential hazard: safety valves installed, using low voltage, low power or batteries.

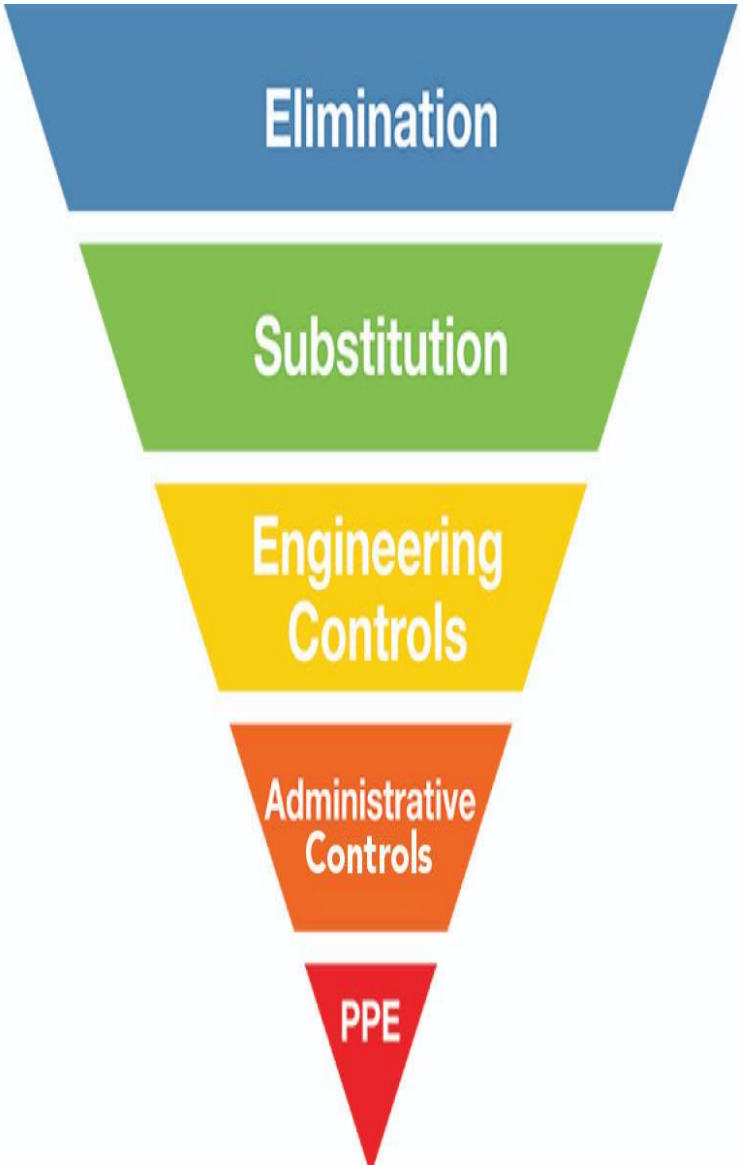
PPE Controls

Personal Protective Equipment:

- Only effective when all other options are not satisfactory or practical.
- Or in normally hazardous operations such as welding, spraying or confined space.
- Or in emergency situations or confined space entry when hazards are unknown.

We shouldn't confuse the role of PPE as a control measure with its more widespread role as a precaution.

" PPE is the Last Line of Defense"



Questions???

A hazard and exposure leads to an accident?	True/False
List 3 forms of Exposure?	
What is a proactive means to eliminate or lessen the threat of hazards?	
List 3 ways of controlling the hazards?	

Please complete your answers by clicking the link or QR code on the next slide

Training Roster

Please complete the training roster by either scanning the QR code on your cellphone or clicking the link below.

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