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he “Hierarchy of Controls” specifies the order in which safety controls are implemented in the workplace. They are the means for reducing employee exposures to occupational hazards. Control measures are established to maintain employee exposures below permissible and recommended limits..

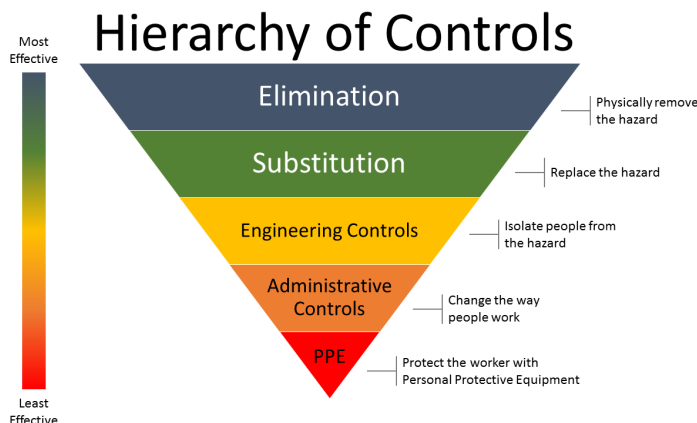
It is more cost-effective to implement safety measures before facilities or processes are built. Using this proactive approach, safety controls are implemented in the early stages of a project, resulting in the prevention of injuries, illnesses, environmental incidents, and property damage.

The following safety controls are arranged in descending order of their effectiveness i.e., Elimination - most effective, PPE - least effective (see figure).

- **Elimination** – Remove the hazard from the workplace (e.g., fall hazards - move work to ground level rather than working at heights, eliminate the need for confined space entry by relocating critical valves outside the confined space).

It is the most effective way to control a risk because the hazard is no longer present.

- **Substitution** – Use a chemical that is less hazardous or less toxic (e.g., replace solvent-based paints with water-based paints, use lead-free solder alloys).
- **Engineering Controls** – Enclose or isolate the hazard (e.g., local exhaust ventilation, machine guarding, guardrails, radiation shielding, interlocking systems, or other safety equipment).
- **Administrative Controls** – Require workers to do things that reduce their exposure to a risk (e.g., standard operating procedures, safe work practices, safety training, warning signs, lockout/tagout, or alarms).
- **Personal Protective Equipment (PPE)** – PPE (e.g., safety glasses/goggles, gloves, respirators, fall protection, ear plugs, and lab coat) is used to enhance existing engineering controls or when engineering controls are not available.



WHAT I NEED TO DO

- Employ engineering controls routinely such as a chemical fume hood, biosafety cabinet, machine guarding, and guardrails to isolate the hazards.
- Read and comprehend administrative controls such as protocols, standard operating procedures, and warning signs. Complete safety training to understand occupational hazards and risks.
- Wear the appropriate personal protective equipment for the hazard. Additional training and medical surveillance may be necessary for certain PPE (e.g., air-purifying respirators).
- For more information about the Hierarchy of Controls, contact EH&S at EHS@usc.edu or (323) 442-2200

REFERENCES

[Centers for Disease Control and Prevention \(CDC\) - Hierarchy](#)

