

The “Hierarchy of Controls” specifies the order in which 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.

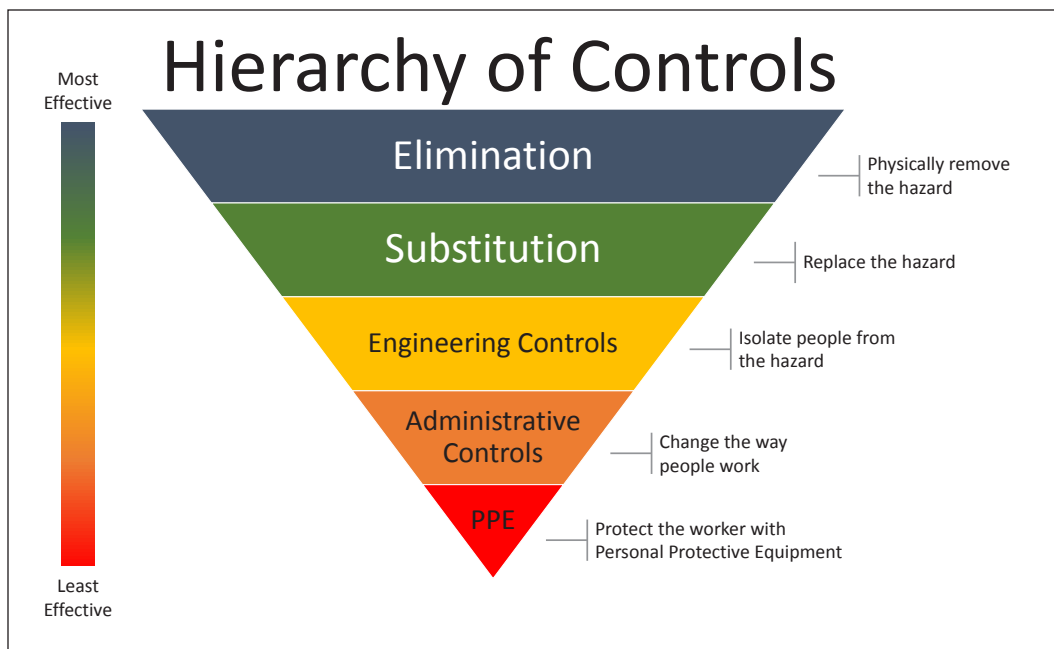
It is usually more cost-effective to implement safety measures before facilities or processes are built. By using this proactive approach, controls are implemented in the early stages of a project, resulting in the prevention of injuries, environmental incidents, and property damage.

- **Elimination** – Remove the hazard from the workplace. 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 than a principal ingredient in a synthesis, for instance. This may add more steps to the process, but may be safer in the long run. Conduct a hazard assessment to verify.
- **Engineering Controls** – Enclose or isolate the hazard with local exhaust ventilation, machine guarding, guardrails, 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, alarms, etc.).

- **Personal Protective Equipment** – PPE (e.g., respirators, fall protection, ear plugs, lab coat) is used when engineering controls are not available and/or to enhance existing engineering controls.

What I need to do...

- Employ engineering controls routinely such as a chemical fume hood, biosafety cabinet, machine guarding, and guard rails 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).



References

Centers for Disease Control and Prevention (CDC)
<http://www.cdc.gov/niosh/topics/hierarchy/>

Occupational Safety and Health Administration - General Hazard Awareness
https://www.osha.gov/dte/grant_materials/fy10/sh-20839-10/basic_hazard_awareness.pptx

For more information about the Hierarchy of Controls, please contact the Office of EH&S at injuryprevention@usc.edu or (323) 442-2200.