Hazard Alert - Hierarchy of Controls
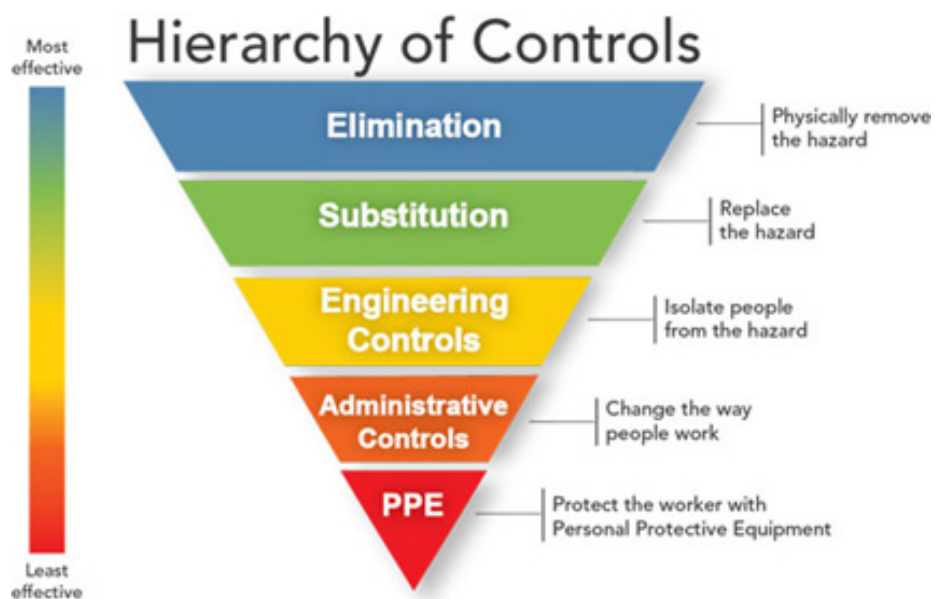

Preventing incidents and injuries can be difficult. Sometimes no matter how much effort is put into prevention, incidents still happen. When faced with this situation, it can be helpful to take a step back and look at other options that are available.

In safety, we utilize the Hierarchy of Controls to rank and compare the possible methods to mitigate hazards. The effectiveness of controls increases as you move from the bottom (PPE) to the top (Elimination). This tool can help identify alternative measures which can be more effective than your current strategy.

Hierarchy of Controls

Most effective

Elimination — Physically remove the hazard

Substitution — Replace the hazard

Engineering Controls — Isolate people from the hazard

Administrative Controls — Change the way people work

PPE — Protect the worker with Personal Protective Equipment

Least effective

Hierarchy of Controls (cont.)

Each action in the Hierarchy of Controls is further described below, and the accompanying chart illustrates the use of the Hierarchy to address a common risk exposure, vehicle collisions.

Elimination is the act of removing a hazard completely, by not performing the task. This is considered the most effective control method because the hazardous task never happens. While this is great in concept, eliminating an activity isn't always realistic. Instead of eliminating a task, consider simply reducing the frequency it occurs to only when it is essential.

Substitution is the act of replacing one task with another. Ideally the replacement task is less hazardous or poses hazards that are easier to manage. But this can create unforeseen issues if the substitute is not fully vetted.

Engineering Controls are physical barriers or equipment which separates the worker from the potential hazard. Examples include machine guarding, roll cages, and vehicle airbags. Engineering controls are often the "sweet spot" for safety controls, because they are highly effective when properly implemented, and require little management afterwards. The downside to engineering controls is they can be expensive to retrofit to existing equipment, and are often seen as an obstacle to workers, and are bypassed to speed up work.

Administrative Controls are the rules, policies, and guidelines that management puts in place to change the way people work. These controls can be highly effective if correctly implemented and followed. But they are only effective if the managers who adopt them and the workers who must follow them are committed to their successful implementation. Also, administrative controls require ongoing monitoring. Problems with administrative controls include insufficient training and enforcement.

Personal Protective Equipment (PPE) is often considered the last line of defense in safety. While using PPE does prevent some injuries, it does nothing to remove the hazard. It only provides a thin barrier between the employee and the hazard.

PREVENTING VEHICLE COLLISION	
Control Type	Potential Solutions
Elimination	Prohibit employees from driving where driving is not an essential function of the job
Substitution	Hire a courier to pick up/drop off deliveries between locations
Engineering Control	Replace aging vehicles with modern vehicles featuring lane departure and collision warning systems
Administrative Control	Employees must practice "Defensive Driving" techniques when driving
Personal Protective Equipment	Wear helmets when driving

When using the Hierarchy of Controls to identify potential solutions, it is important to find the right balance of control versus risk for each situation. While higher level solutions such as elimination and substitution are more effective, they may not be realistic.

Often, a combination of two or more control methods may be necessary to adequately minimize the hazard.

If your entity is assessing safety hazards or exposures and would like input or assistance from the CIRSA Risk Control team, please contact your CIRSA Risk Control Representative.