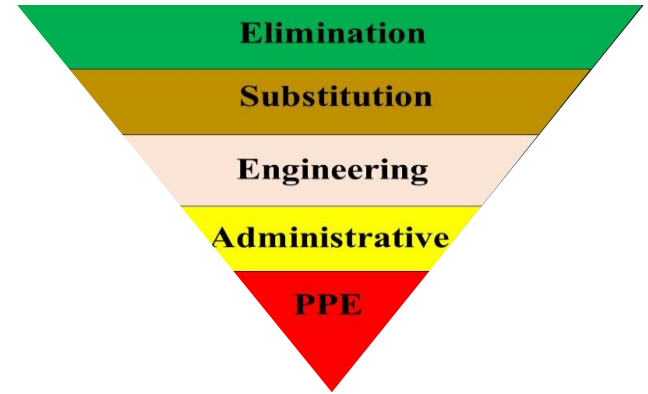


The Hierarchy of Controls

Now, the hierarchy of controls is a systematic procedure for reducing risk by starting with the most effective method of eliminating risk and then working down toward solutions that provide a lesser level of protection only when higher levels of protection aren't feasible. As you can see, this triangle is divided horizontally into 5 separate sections. Now, it's important that we always start at the top of this funnel or triangle and provide ourselves or our workers the highest level of protection that's feasible.



This top section is labeled “**Elimination.**” Use of this section provides workers the greatest level of protection because it either eliminates the hazard or the exposure to the hazard completely. Let's take a look, Jerry's boss has just asked him and his co-worker to make a repair on top of this boiler during this shutdown. Obviously, a fall hazard is the first hazard that jumps out at us. So the idea is to ask ourselves, “Can we eliminate the hazard or exposure to the hazard?” So instead of automatically grabbing a harness and going to work, let's ask, “Can I completely eliminate this hazard?” Well, would handrails and guardrails eliminate the need for fall protection? What about hole covers?” Well, the answer is absolutely. If we install handrails or guardrails, install hole covers, we could eliminate the fall potential and even do the job without even wearing fall protection.

The next section under Elimination is “Substitution.” Substitution is almost as effective as elimination and does provide a level of protection that's superior to some of the other controls below it. Let's take a look at Tommy. He's a mechanic that works at this automotive shop. Now, Tommy has used this parts vat for the last 6 years to clean parts during the course of his work. Periodically throughout the day, every day, he washes parts using the gasoline in a parts vat or a parts cleaner. Now, gasoline is flammable and is also a known carcinogen meaning it's been proven to cause cancer. So how could Substitution, help protect Tommy from these hazards? How about substituting the gasoline in the parts vat with another substance that's not as hazardous but still gets the job done? Well, that's an example of substitution. What about if Jerry moved the elevated work to the ground to alleviate any fall potential? Well, that would also be substitution, as well. He substituted the work environment.

The Hierarchy of Controls

Next, we have engineering controls. Engineering controls somewhat encompasses the first two which were elimination and substitution. Engineering controls is exactly what it says. It's where we would use engineering to design the handrails or hole covers for Jerry's project, or where we use chemical engineering to find or develop a safer solvent for Tommy's shop.

Here we have Max and his crew preparing to complete a 3 hour maintenance task on this barrel pump. This nearby compressor is currently running at approximately 125 decibels. This means it's extremely **too loud**. So how can engineering controls help protect Max's crew from this hazard? What if we installed sound-proofing baffles around the compressor? Well, that would be another example of engineering controls. And it would work but it would take us weeks or even months to design, construct and install these controls and the original task is a 3-hour project. So, sound-proofing baffles wouldn't be feasible here. Now, when elimination, substitution and engineering controls aren't feasible we continue down the hierarchy of controls where we find administrative controls.

Let's run this scenario down this hierarchy of controls. Can we completely eliminate this hazard? Well, we could by removing the compressor. Remember, the original maintenance task is only a 3-hour project so that's really not a feasible option. Next, can we substitute the hazard? Maybe changing this compressor out for a quieter one. We could, but once again that's probably not feasible, either. So now we move down to engineering controls. What if we engineered sound- proofing baffles around the compressor? This could isolate workers from the hazard by utilizing engineering controls. And it would work but it would take us weeks or even months to install them and the original task is still a 3 hour project. So, sound-proofing baffles probably wouldn't be feasible either. So when elimination, substitution and engineering controls aren't feasible we continue down the hierarchy of controls where we find administrative controls.

Administrative controls include a wide range of lesser effective controls to reduce worker exposure to hazards.

Administrative controls (also called work practice **controls**) are work procedures such as written safety policies, adequate supervision, schedules, and training with the goal of reducing the duration, frequency, and severity of exposure to hazards. Administrative Controls also includes things like warning signs, tags and labels, workplace policies and work procedures, training and limiting exposure to hazards by spreading the exposure around among several workers. We say these controls are less effective because the warning signs, tags and labels do warn the worker of the hazard but they provide no protection if they aren't understood or if they're ignored. The policies and procedures are only effective if they're understood, communicated and followed. And training is only as effective as the trainee's memory or commitment.

Now at the very bottom of the hierarchy of controls is where we'll find personal protective equipment or (PPE). That's because PPE is only supposed to be a last line of defense.