

Five Strategies for Better Worker Safety

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Protecting Your Workers with the Hierarchy of Controls Model

Objectives:

Hierarchy of Controls is a widely used model for protecting workers. This presentation will include:

- A breakdown of the model's fundamental methods,
- Real-life examples of businesses using the model, and
- Insight and tools for implementing the model in your organization.

Safety and The Hierarchy of Control Method

Controlling exposures to occupational hazards is the fundamental method of protecting workers. Traditionally, a hierarchy of controls has been used as a means of determining how to implement feasible and effective control solutions.

General Principles

The best way to control a hazard is to systematically remove it from the workplace, rather than relying on employees to reduce their exposure.

Polling Question

What types of controls do you most commonly use at your facility or employee work location?

- A) Engineering
- B) Administrative
- C) Personal Protective Equipment
- D) a combination of all the above

Safety and The Hierarchy of Controls Method

Machine Guarding Example

Protective Measure	Examples
Elimination or Substitution	<ul style="list-style-type: none"> • Eliminate human interaction in the process • Eliminate pinch points (increase clearance) <ul style="list-style-type: none"> • Automated material handling tools
Engineering Controls (Safeguarding Technology/Protective Devices)	<ul style="list-style-type: none"> • Barriers • Interlocks • Presence sensing devices (e.g. light curtains, safety mats, area scanners)
Awareness Means	<ul style="list-style-type: none"> • Lights, beacons, strobes <ul style="list-style-type: none"> • Computer warnings • Signs and labels • Beepers, buzzers, horns and sirens
Training and Procedures (SSOP-Administrative Controls)	<ul style="list-style-type: none"> • Safe work practices • Safety equipment inspections <ul style="list-style-type: none"> • Training • Lockout/Tagout
Personal Protective Equipment (PPE)	<ul style="list-style-type: none"> • Safety glasses, goggles, face shields <ul style="list-style-type: none"> • Ear plugs, muffs, inserts • Gloves, footwear, respirators

Safety and The Hierarchy of Controls Method

Most Effective

Machine Guarding Example

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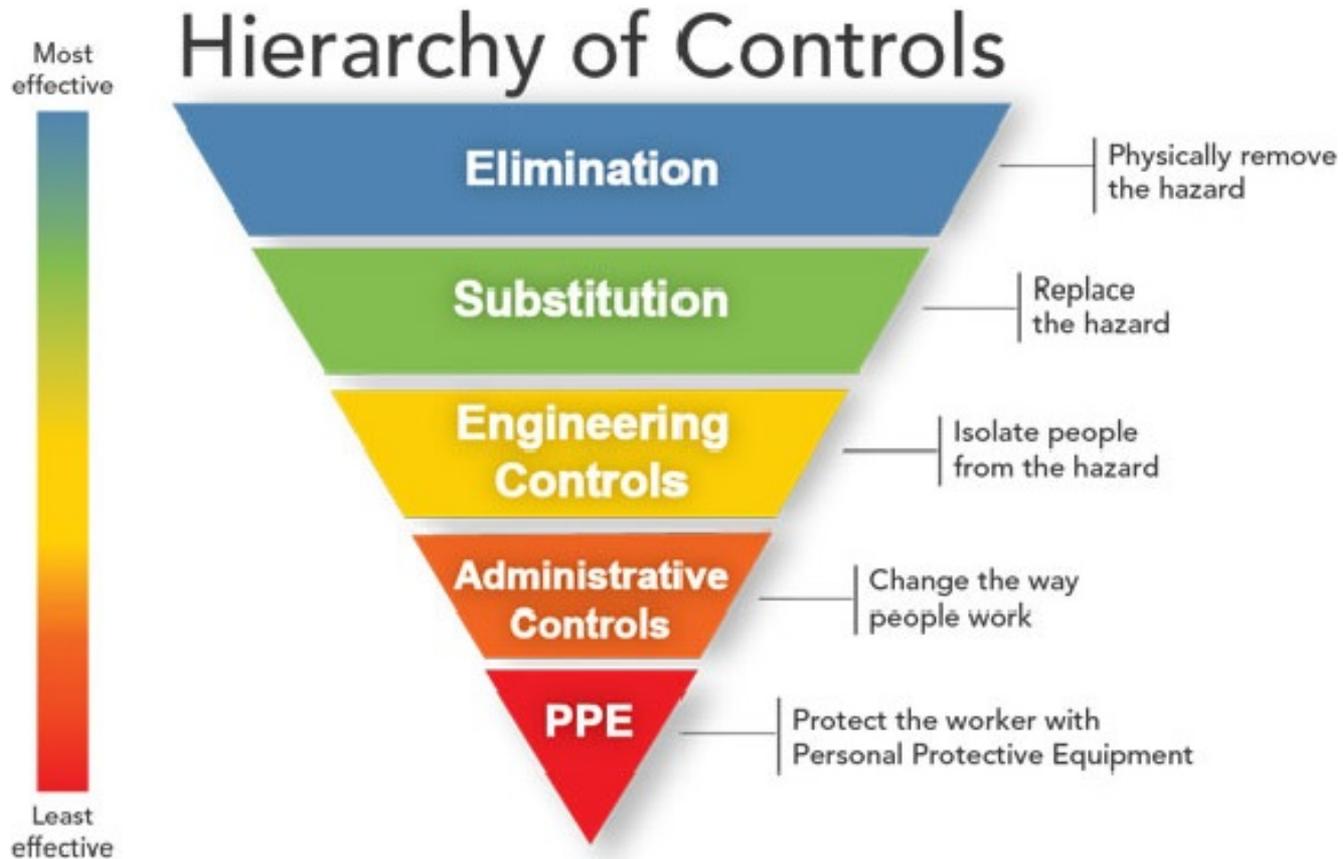
Least Effective



Safety and The Hierarchy of Control Method

The idea behind this hierarchy is that the control methods at the top of graphic are potentially more effective and protective than those at the bottom. Following this hierarchy normally leads to the implementation of inherently safer systems, where the risk of illness or injury has been substantially reduced.

Safety and The Hierarchy of Control Method



Avoidance/Elimination

Avoidance, while most effective at totally eliminating the hazards, tend to be difficult to implement in a work environment. If the work needs to be performed not all risks can be transferred and some hazards are inherent in work that is performed for hire as a core part of conducting business.

However there are ways of minimizing and other wise controlling employee exposures.

Elimination and Substitution

Elimination and substitution, while most effective at reducing hazards, also tend to be the most difficult to implement in an existing process.

Engineering Controls

Engineering Controls are favored over administrative and personal protective equipment (PPE) for controlling existing worker exposures in the workplace because they are designed to remove the hazard at the source, **before it comes in contact with the worker.**

Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions, behavior to provide this high level of protection.

Engineering Controls

Engineering controls protect workers by removing hazardous conditions or by placing a barrier between the worker and the hazard. Examples include local exhaust ventilation to capture and remove airborne emissions or machine guards to shield the worker.

Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions.

Engineering Controls cont.

Engineering controls typically do not interfere with worker productivity or personal comfort and make the work easier to perform rather than more difficult.

The initial cost of engineering controls can be higher than some other control methods, but over the longer term, operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process.

Advantages of Engineering Controls

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Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

Engineering Controls cont.

The initial cost of engineering controls can be higher than the cost of administrative controls or PPE, but over the longer term, operating costs are frequently lower, and in some instances, can provide a cost savings in other areas of the process.

Administrative Controls

Administrative controls are frequently used with existing processes where hazards are not particularly well controlled.

Administrative controls may be relatively inexpensive to establish but, over the long term, can be very costly to sustain. This method for protecting workers have also proven to be less effective than other measures, requiring significant effort by the affected workers.

Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) programs and equipment are frequently used with existing processes where hazards are not particularly well controlled, or while other methods are being reviewed.

PPE controls may seem to be relatively inexpensive to establish but, over the long term, can be very costly and time, labor intensive to sustain. This method for protecting workers have also proven to be less effective than other measures, requiring significant effort by the affected workers.

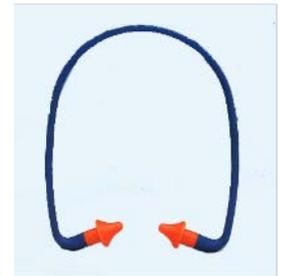
Polling Question

Why is Personal Protective Equipment (PPE) on the lowest level of the hierarchy of controls?

- A) PPE must be properly selected for the hazard and its use assessed
- B) PPE is an active method of control (e.g. the employee needs to do something) and training in use is required
- C) PPE is expensive we don't want to pay for it.
- D) PPE can fail

Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) programs and equipment are passive methods of control. They can also fail due to poor selection, design and use, misuse by the employee.



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Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) program need not be written but it must include a documented hazard analysis to determine the proper selection, use and training base don the hazards present.

Often times this step is omitted and organizations go right to handing out PPE which may be of the wrong type, or they are allowing employee to use their own PPE which may not be appropriate. It also can be difficult to manage.

Personal Protective Equipment (PPE)

Documentation of the hazard assessment should include the following information:

Identification of the worksite evaluated

Name of person(s) conducting the assessment

Date of assessment

Identification of the document certifying completion of the hazard assessment.

Personal Protective Equipment (PPE)

Proper Personal Protective Equipment (ANSI Approved- depending on the task being performed and the equipment in use, the combination of required PPE can vary):

Eye protection (safety glasses, goggles)

Face protection (face shield)

Rubber or other gloves

Rubber boots

Coveralls (Tyvek as required)

Particulate masks

Hearing protection

High visibility vests

Head protection (hard hats)



Personal Protective Equipment (PPE)

For hand protection there is no ANSI standard for gloves but OSHA recommends that selection be based on the tasks to be conducted and the performance and construction characteristics of the of the glove material.

For protection against chemicals the glove selection must be based on the chemicals encountered, the chemical resistance and physical properties of the glove material.

Polling Question

The best strategy for controlling exposures is to:

- A) Avoid all hazardous exposures
- B) Only use engineering controls
- C) Since it's a function of HR and Safety Administrative controls are best
- D) Use a combination of controls (e.g. Administrative and PPE while Engineering is being researched and developed)

Examples of Controls

Engineering-Local exhaust ventilation to capture and remove airborne emissions:

- Paint booths
- Sand blasting glove boxes
- Table saws and other woodworking tools

Examples of Controls

Engineering: Machine guards, light sensing bars, two hand controls preventing access to point of operation by the operator.

- Punch presses
- Milling
- Drilling, cutting shearing

Examples of Controls

Engineering: Noise barriers, shields, better machine design to remove noise generating parts, operations.

Examples of Controls

Administrative Control-Policy Development

Examples of Controls

Administrative Control Employee Training

Examples of Controls

Administrative Control Employee Rotation

Note: This method is not allowable to reduce exposures to PELs, airborne exposures, etc.

Examples of Controls

Administrative Control Employee Selectivity

Examples of Controls

Substitution-Wet process for dry process to prevent dust build up

- Concrete Sawing
- Press Cake waste

Examples of Controls

Substitution-Gasket prep process to a non-styrene (“low odor threshold”) based product

- Designated location with fewer employees
- Vibratory blade stamping instead of abrasive blade

Examples of Controls

Personal Protective Equipment-Can be utilized effectively while other methods are being reviewed research and implemented.

Employees must be trained to know the following:

- When PPE is necessary
- What PPE is necessary
- The limitations of the PPE
- Proper care, maintenance
- Useful life and disposal of the PPE

Polling Question

What types of controls will consider for your facility or employee work location?

- A) Engineering
- B) Administrative
- C) Personal Protective Equipment
- D) a combination of all the above

Questions??

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