

# The Hierarchy of Controls - How Does it Apply to My Lab?

The hierarchy of controls is a method that is used throughout safety to rank safeguards that protect individuals from hazards. When taken individually, the controls are organized from the most effective (elimination) to the least effective (personal protective equipment). Often, a combination of control methods is used to provide the best protection, so when taken together, the implementation of multiple methods is typically the most used to control a hazard effectively. Ensuring that the hierarchy of controls is fully applied to a given hazard scenario takes an approach with a safety-first mindset.

So, how does the hierarchy of controls apply to your lab? When addressing hazards in laboratories, below is a list with various options to achieve each control method. The overall strength of each control method may depend on the institution of multiple items to address a given hazard scenario. That said, this list is not exhaustive but shows most of the more common considerations organized into the hierarchy of controls when addressing potential hazards in laboratories.

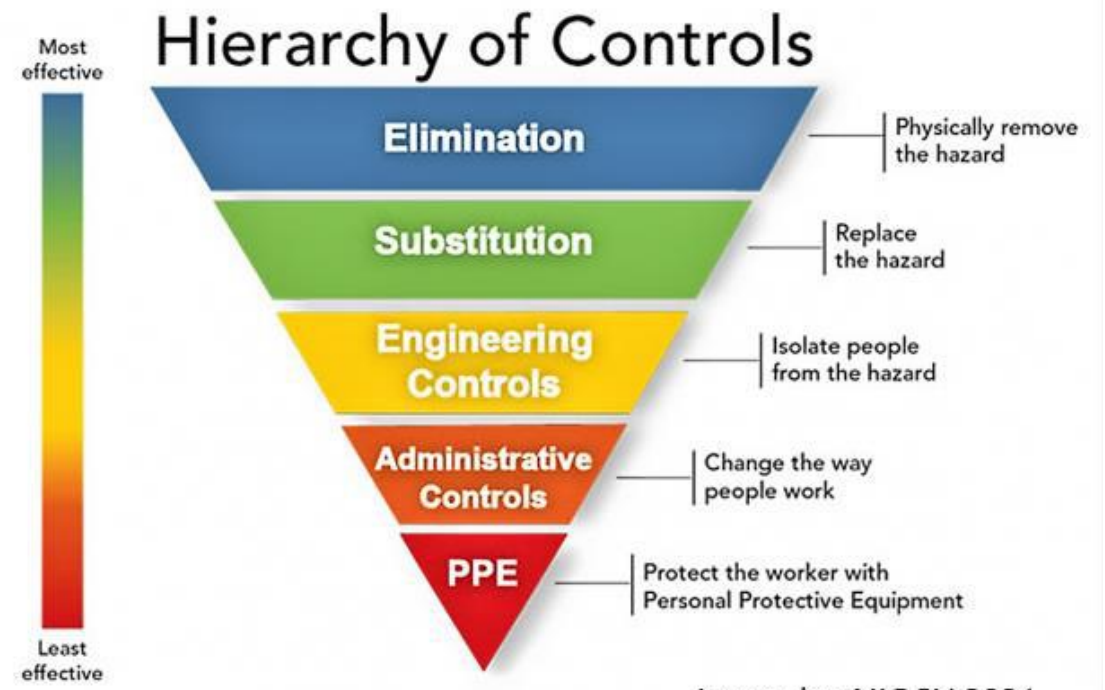


Image by: NIOSH 2021

## Elimination

Makes sure the hazard no longer exists

- Ending the use of a hazardous material
- Stopping the use of hazardous equipment

## Substitution

Means changing out the material or process to reduce the hazard

- Switching to a less hazardous material
- Switching to a process that uses less volume, weight, force, speed, temperature, or current

## Engineering Controls

Controls exposure by preventing hazards from coming into contact with people

- Chemical fume hoods
- Biosafety cabinets
- Safety curtains
- Interlocks
- Machine guards
- Local and area ventilation

## Administrative Controls

Change the way activities are done or give people more safety information

- Training
- Committee review
- Signage and alarms
- Institutional EHS Plans
- Labels/Instructions
- Lab hygiene
- Inspections
- Safety Data Sheets
- Preventative maintenance
- Standard Operating Procedures
- Equipment certifications
- Chemical Storage

## PPE

Clothing and wearable devices to protect people against exposure or contact

- Gloves
- Safety glasses
- Lab coat
- Lab attire
- Close-toed shoes
- Hearing protection
- Dust masks
- Face shields
- Protective clothing

Sources: National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), Centers for Disease Control and Prevention (CDC)