



# **RECOGNIZING & COMMUNICATING RISK**

**Lecture 05**

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# What is a Risk?



Risk is defined as:

“The chance or probability that a person will be harmed or experience an adverse health effect if exposed to a hazard.”

For example:

The risk of developing cancer from smoking cigarettes could be expressed as:

- Cigarette smokers are 12 times (for example) more likely to die of lung cancer than non-smokers
- or
- The number per 100,000 smokers who will develop lung cancer (actual number depends on factors such as their age and how many years they have been smoking).

These risks are expressed as a probability or likelihood of developing a disease or getting injured, whereas hazard refers to the agent responsible (i.e. smoking).



# Basic Definitions Related to Risk

1. Hazard: A situation that can cause harm, ill-health, injury or damage to property or the environment.
1. Harm: It is the loss to a human being (or to the human population) consequent on damage.
2. Damage: It is the loss of inherent quality suffered by an entity (physical or biological).
3. Risk Estimation: It is the first subdivision of Risk Assessment and includes the identification of outcomes, the estimation of the magnitude of the associated consequences of these outcomes, and the estimation of the probabilities of these outcomes.
4. Risk Evaluation: It is the second subdivision of Risk Assessment and is the complex process of determining the significance or value of the identified hazards and estimated risks those concerned with or affected by the decision.
5. Risk Assessment: The HSE state that you must make a 'suitable and sufficient assessment' of risks to employees health and safety. This includes risks created because of your work that are going to affect people not in your employment.
6. Risk Management: The process of putting control measures into practice and monitoring the results, with the intention of reducing, or eliminating, the potential risks to health and safety.

# The Components of Risk

# Hazard

- The definition of ‘hazard’ presented above has two elements.
  - i. The ability to harm a person.
  - ii. does not mean that harm will arise – a hazard has to have the potential to harm.
- There are 2 types of hazards.
  - a. Acute hazard
  - b. Chronic hazard

# Consequences

- The harm that arises from a hazard is the consequence of it.
- It is important to identify the possible consequences before embarking on a hazard control strategy.

# Likelihood

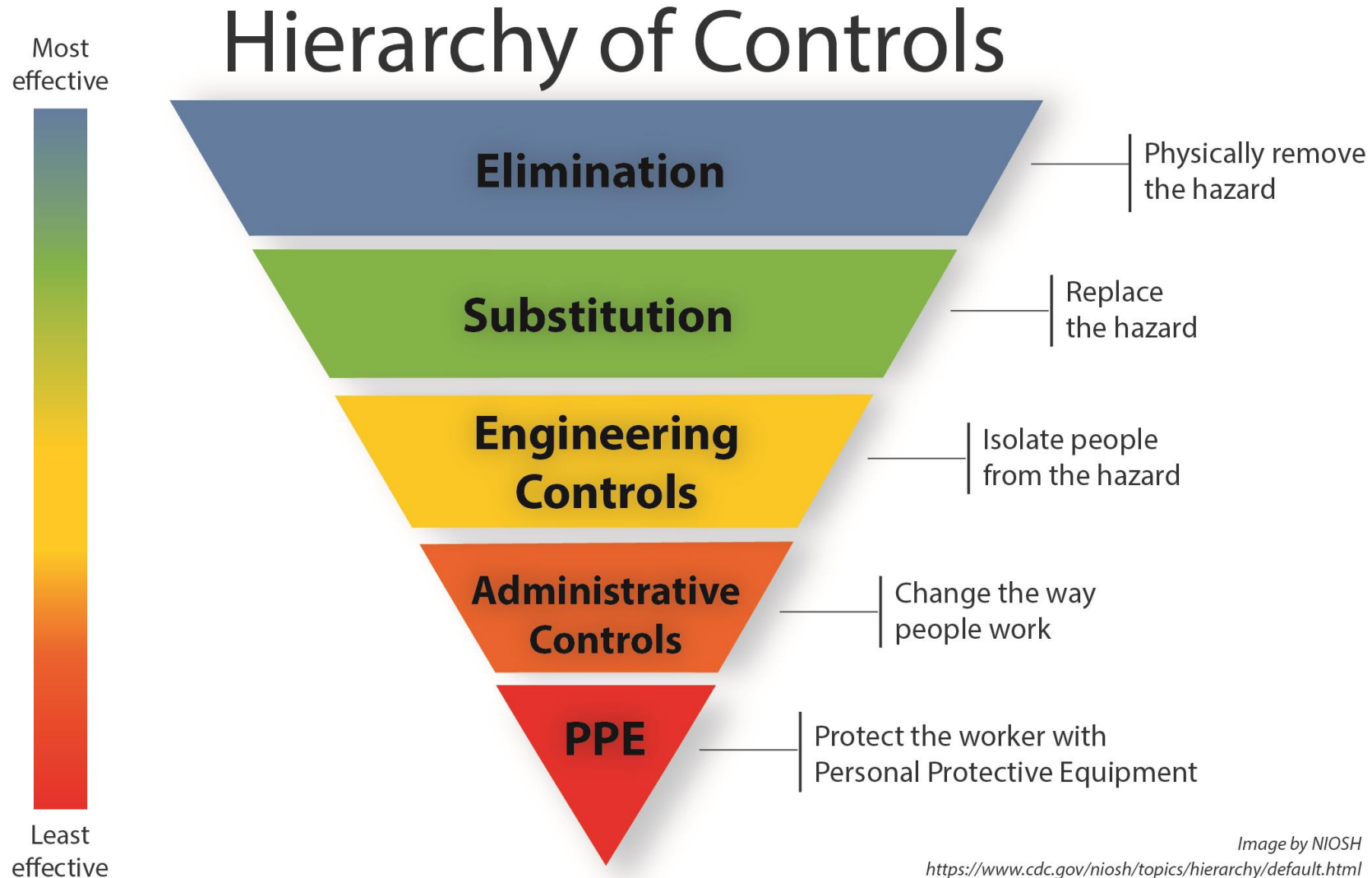
- An important element of risk is the likelihood or probability that the hazard will cause injury.
- In its simplest form, probability can be considered as high, medium or low and for the majority of this risk assessments this should prove adequate.

# Strategies to Control Risk





# Risk Control Hierarchy





# Types of Hazards



Biological Hazards



Chemical Hazards



Physical Hazards



Safety Hazards



Ergonomic Hazards



Psychosocial Hazards

# Types of Hazards

Various types of hazards are as follows:

## **a. Biological Hazards:**

- Biological hazards are caused by living organisms that produce hazardous substances that can enter the human body either by breathing, touching, ingesting, or injection.
- Example: bacteria, viruses, insects, plants, birds, animals, and humans, etc.

## **b. Chemical Hazards:**

- Chemical hazards are caused by exposure to toxic chemical substances in the form of solids, liquids, gases, fumes, vapors, mists, and dusts.
- Example: skin irritation, respiratory illnesses, and blindness

## **c. Ergonomic Hazards:**

- Ergonomic hazards are mainly musculoskeletal injuries that occur due to bad sitting posture, repetitive awkward movements, frequent lifting, extreme temperature, bad lighting, and work stress.

#### **d. Physical Hazards:**

- Hazards that cause a physical injury to a worker due to the workplace environment having excessive levels of ionizing and nonionizing electromagnetic radiation, noise, vibration, illumination, and temperature are known as physical hazards.
- Example: Slippery floors, objects in walkways, unsafe or misused machinery, excessive noise, poor lighting, fire, radiation, magnetic fields, pressure extremes (high pressure or vacuum), noise, etc.

#### **e. Psychological Hazards:**

- Psychosocial hazards can occur due to the workplace environment or work stress. Workplaces, where there is discrimination, harassment, victimization, or a generally negative perception by employees, can lead to such hazards.
- **Example:** Working Shifts, workload, dealing with the public, harassment, discrimination, threat of danger, constant low-level noise, stress, violence, etc.

#### **f. Safety Hazards:**

- Safety hazards occur due to unexpected circumstances and avoidable circumstances.
- Examples: slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns



# TOP 6 WORKPLACE HAZARDS

A COMMON WAY TO CLASSIFY HAZARDS  
IS BY CATEGORY:



## BIOLOGICAL

Bacteria, viruses, insects, plants, birds, animals, and humans



## CHEMICAL

Depends on the physical, chemical and toxic properties of the chemical



## ERGONOMIC

Repetitive movements, improper setup of workstation, poor design of equipment, workstation design



## PHYSICAL

Radiation (ionizing and nonionizing), high exposure to sunlight and ultraviolet rays, temperature extremes, and constant loud noises



## PSYCHOLOGICAL

Shift work, workload, dealing with the public, harassment, discrimination, threat of danger



## SAFETY

Slipping/tripping hazards, inappropriate machine guarding, equipment malfunctions or breakdowns