



# Chemical hazardous part 1

M.Sc. Rasha Fajer



# Introduction

Chemicals play a crucial role in enhancing and improving our lives, but they also come with potential adverse effects on people and the environment

To address this, various countries and organizations have developed laws and regulations that require information about chemicals to be prepared and transmitted through labels or safety data sheets (SDS).



# Chemical hazards

- Chemical hazards are mainly caused by the characteristics of **chemical substances** that may cause **explosions, fires, or corrosions**; or **emit toxic gases** or mini particles. Often, **chemical substances react negatively when exposed to, or mixed with, other materials or chemical substances**. For instance, Asbestos particles are usually dispersed in the atmosphere when moved.



# Routes of Chemical Exposure

**1-Inhalation** – that is breathing in toxic vapors or small chemical particles

**2-Absorption** – such as direct exposure to the skin by touching a chemical substance without any protection such as wearing gloves.

**3-Injection** – that is when a sharp contaminated object or needle accidentally penetrates a worker's body (such as hand or foot).

**4-Ingestion** – that is when toxins are accidentally swallowed



# Types of Chemical Hazards part 1

**1-Asphyxiants:** Chemical asphyxiants deprive the body of oxygen; interrupting the transfer and use of oxygen by the bloodstream.

- Asphyxiant Chemical Examples: Carbon monoxide and cyanide



## 2-Corrosives

it cause visible & irreversible changes to the composition of a material due to direct contact. these can also cause a localized reaction in the human body at the point of contact.

**Corrosive Chemical Examples:** Sulfuric acid and sodium hydroxide.



## 3-irritants

irritants cause harm to the eyes, skin, or respiratory tract of a person. Irritants are either highly, moderately, or fatal.

Irritant Causing Chemical Examples: nickel chloride and chromic acid



## 4-Sensitizers

Sensitizers are also known as **allergens** meaning they cause an allergic reaction in people who face repeated exposure over time to certain chemicals.

Allergen Causing Chemical Examples: Chlorine and alkalis.





# Types of Chemical Hazards part 2

**5-Carcinogen** they are cancer-causing chemical substances,

**Chemical Carcinogen Examples:** Benzene, cadmium, [formaldehyde](#), and [vinyl chloride](#).



## 6-Mutagens

cause genetic changes to a cell's DNA and RNA.

Genetic changes can cause cancer,

Chemical Mutagen Examples: Benzene, ionizing radiation, and hydrogen peroxide.



## 7-Teratogens

Chemical teratogens can disrupt the normal development of a fetus causing birth defects and even the healthy advancement of pregnancy.

Chemical Teratogen Examples: Thalidomide, ionizing radiation, and organic mercury compounds



## 8-Reactive

It cause explosion when mixed or combined with other chemical or non-chemical substances such as water or air.

Reactive Chemical Examples: Nitric acid, benzoyl peroxide, and silane.



## 9- Flammable

they can easily burn or ignite when exposed to oxygen.

Flammable Chemical Examples: Methanol, acetone, propane, and butane



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