

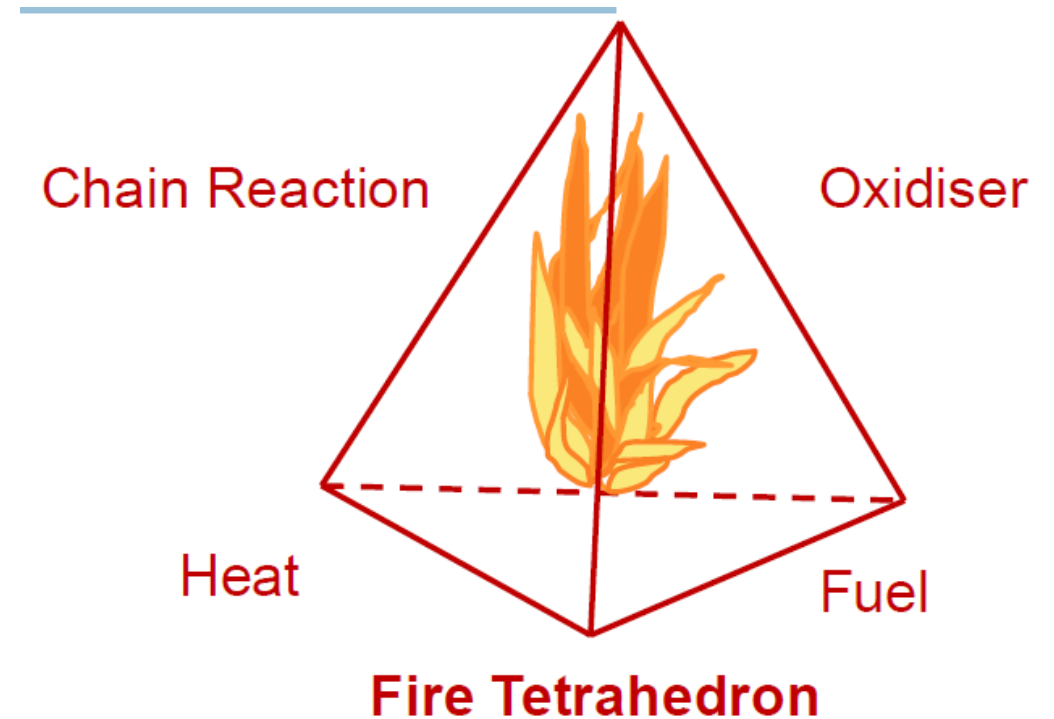
# FIRE SAFETY



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# Introduction

- Fire is a rapid chemical reaction of oxidant with fuel accompanied by the release of energy, indicated by incandescence or flame.
  - For a fire to happen, the following elements are essential
    - ✓ Oxidiser to sustain combustion.
    - ✓ Heat to reach ignition temperature.
    - ✓ Fuel or combustible material. This results in a chemical chain reaction which starts a fire.
  - Removing any of these elements will extinguish the fire.
- ### Combustion Characteristics



# IGNITION

- Ignition is the process of initiating self sustained combustion.
- •The ignition temperature of a substance is the minimum temperature to which it must be heated for it to ignite.
- Ignition can occur by
  - •Electrically powered equipment-Arcing, damaged wiring, over heating of cables due to excess loads, loose electrical connections, heat from electric bulbs etc.
  - •Open flame
  - •Hot surfaces
  - •Sparks from welding operations
  - •Chemical reaction between incompatible chemicals
  - •Smoking
  - •Batteries

# IGNITION

- In a flammable liquid fire, it is the vapors released from the surface of the liquid that burns.
- Flash point is the lowest temperature at which a liquid produces enough vapor to form an ignitable mixture.
- E.g., Diethyl ether (-45 ° C)
- Methyl alcohol (11.1°C)
- Lower the flash point of a flammable liquid, greater the hazard.

# Classification of Fires

- On the basis of the type of fuel, fires are classified into the following
- Class A Fires —solid combustible materials of organic nature such as wood, paper, rubber, plastics, etc.
- Class B Fires —flammable liquid
- Class C Fires —flammable gases under pressure including liquefied gases.
- Class D Fires —combustible metals, such as magnesium, sodium, potassium, etc,

