FIRE SAFETY
TOPICS

➢ What is Fire?
➢ Methods to extinguish Fire.
➢ Classification of Fire and their preventions.
➢ Types of Fire Extinguishers.
➢ Anatomy of Fire Extinguishers and their operation.
➢ Safety guidelines while working at Chemical Labs.
➢ Fire Fighting decision criteria.
➢ Fire Survey Report
WE KNOW......
➢ Triangle is out….now Tetrahedron is in…
➢ Consists of 4 Sides
WAYS TO EXTINGUISH FIRE

By eliminating any one element from the fire Tetrahedron, fire can be stopped by the following methods:

➢ **Cooling** - by using water

➢ **Starvation** - by removing adjacent material from the site of fire

➢ **Smothering** - by cutting off air supply
# Classification of Fire

<table>
<thead>
<tr>
<th>Class of Fire</th>
<th>Type of Fire</th>
<th>Type of Extinguisher</th>
<th>Extinguisher Identification</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ordinary combustibles: wood, paper, rubber, fabrics, and many plastics</td>
<td>Water, Dry Powder, Halon</td>
<td>A</td>
<td><img src="image" alt="A Symbol" /></td>
</tr>
<tr>
<td>B</td>
<td>Flammable Liquids and Gases: gasoline, oils, paint, lacquer, and tar</td>
<td>Carbon Dioxide, Dry Powder, Halon</td>
<td>B</td>
<td><img src="image" alt="B Symbol" /></td>
</tr>
<tr>
<td>C</td>
<td>Fires involving Live Electrical Equipment</td>
<td>Carbon Dioxide, Dry Powder, Halon</td>
<td>C</td>
<td><img src="image" alt="C Symbol" /></td>
</tr>
<tr>
<td>D</td>
<td>Combustible Metals or Combustible Metal Alloys</td>
<td>Special Agents</td>
<td>D</td>
<td><img src="image" alt="D Symbol" /></td>
</tr>
<tr>
<td>K</td>
<td>Fires in Cooking Appliances that involve Combustible Cooking Media: Vegetable or Animal Oils and Fats</td>
<td></td>
<td>K</td>
<td><img src="image" alt="K Symbol" /></td>
</tr>
</tbody>
</table>
TO PREVENT FIRES

Class \( \rightarrow \) Ordinary Combustibles:

- Keep storage and working areas free of trash.
- Good House keeping practices reduce the chances of general fire.
- Place oily rags in covered containers.
- No Smoking is to be strictly adhered by all at working areas.
TO PREVENT FIRES

Class B ⇒ Inflammables Liquids & Gases:

➢ Don’t refuel gasoline-powered equipment in a confined space, in the presence of an open flame, or while the equipment is hot.
➢ Keep flammable liquids stored in a tightly closed container and away from spark producing sources.
➢ Use flammable liquids only in well ventilated areas.
➢ Never use mobile phones at Fuel stations.
TO PREVENT FIRES

Class  ➞  Electrical Equipments:

➢ Never install a fuse rated higher than specified for the circuit.
➢ Investigate any appliance or electrical equipment that smells strange. Unusual odors can be the first sign of a potential fire.
➢ Utility lights should always have some type of wire guard over them.
➢ **Switch off electrical appliances when not in use.**
TO PREVENT FIRES

Class C

⇒ Electrical Equipments:

Please do not use power plugs more than their ratings.
TO PREVENT FIRES

Class D ⇒ Flammable metals:

- Knowledge of the properties of the metals and using good judgment will assist you in controlling or avoiding potential fires/reactions.
- Store inflammable metals away from the working areas.
Three types of commonly used Portable fire extinguishers:

- AFFF compound (water based)
- Dry Chemical Powder (MAP powder)
- CO₂
TYPES OF PORTABLE FIRE EXTINGUISHERS

- Co2
- AFFF
- DCP ABC Store Pressure Type
- DCP BC Cartridge Type
FIRE SAFETY

Anatomy of a Fire Extinguisher

- Discharge Locking Pin and Seal
- Pressure Gauge (not found on CO₂ extinguishers)
- Discharge Hose
- Discharge Nozzle
- Discharge Orifice
- Discharge Lever
- Carrying Handle
- Data Plate
- Body
Anatomy of Fire Extinguishers
HOW TO USE PORTABLE FIRE EXTINGUISHERS
IF YOU FIGHT A FIRE, REMEMBER THE WORD PASS
PULL...AIM...SQUEEZE...SWEEP

To operate an extinguisher:

1. Pull the pin
2. Aim nozzle at base of fire
3. Squeeze the handle
4. Sweep nozzle side to side

Know your extinguisher
Use the correct extinguisher

(Check your own extinguisher's label for detailed instructions.)
COMMON SAFETY GUIDELINES AT LABS

➢ Use personal protective equipment.
➢ Chemicals received must be checked to ensure that the containers are in good condition.
➢ Details of new chemicals must be entered in the laboratory inventory and stored in a designated area.
➢ Bulk stocks must be stored in a separate building.
➢ Chemicals must not be placed indiscriminately in the storage shelf. They must be grouped based on their compatibility.
➢ In the event of an accidental breakage or seismic activity, incompatible chemicals that are stored in close proximity can mix to start a fire, hazardous fumes or explosions.

➢ Ensure eye washer and Safety Shower are operational.

➢ Ensure proper ventilation of the working area.

➢ Do not work alone in the laboratories particularly when performing hazardous procedures.

➢ Do not perform unauthorized Experiments.

➢ Know Emergency Escape routes of the Building.

➢ Know operation of Portable Fire extinguisher and their location.
FIRE FIGHTING DECISION CRITERIA

- **Know** Labs emergency procedures and evacuation routes
- **Know** locations of extinguishers in your area and how to use them
- **Always** sound the alarm **regardless** of fire size
- **Avoid** smoky conditions
- **Ensure** area is evacuated
- **Never** use lifts to evacuate
- **Don’t** attempt to fight unless:
  - Alarm is sounded
  - Fire is **small** and **contained**
  - You have safe egress route (can be reached **without** exposure to fire)
  - Available extinguishers are rated for size and type of fire
- If in doubt, **evacuate**!

“DON’T ATTEMPT TO FIGHT UNLESS YOU ARE TRAINED”
On an average, in India, every year, about **25,000 persons die** due to fire accidents.

**Female** accounts for about **66%** of those killed in fire accidents.

It is estimated that about **42 females and 19 males die every day in India due to fire accidents**.

According to losses reported by the Indian Insurance Companies, that about **45% of the claims are due to fire losses**.

According to another estimate about **Rs. 1000 crores are lost every year due to fire**.

In Mumbai about **75%** of fire-related incidents occur because of short circuit caused by loose wiring in year 2017.
IN CASE OF FIRE

➢ INFORM FOLLOWING IMMEDIATELY:

Main Gate, South Campus – 01905 267096
Main Gate, North Campus – 01905 267219
Fire – 101
Security Officer – 9418053088
FIRE SAFETY IS EVERYONE'S BUSINESS

Kill Fire Before It Kills You.

Thank You