

A LECTURE DELIVERED BY
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ON
**FIRE HAZARD: CAUSES, PREVENTION AND BASIC FIRE
FIGHTING**

ORGANISED BY
CHEMISTRY DEPARTMENT

POWERED BY:
COVENANT UNIVERSITY, OTA
ALONG OTA-IDIROKO ROAD, OTA

28th June – 1st July, 2016

Fire Safety and Prevention



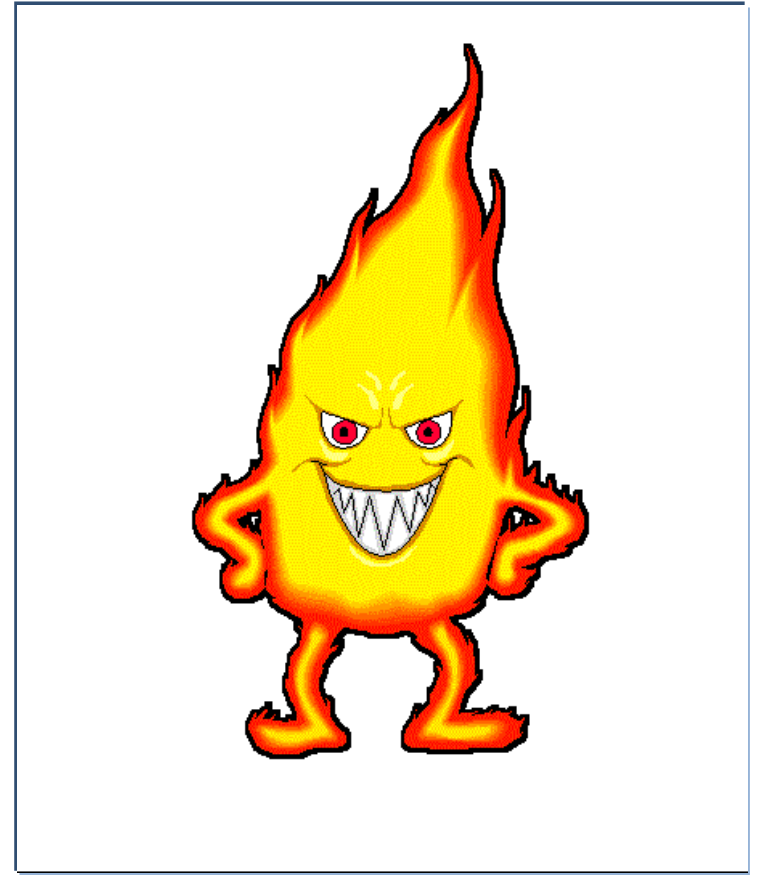
Objectives

At the end of this presentation, participants will be able to:

1. Explain what is a fire: definition and effects.
2. Identify the classification of types of fire as they relate to the use of portable extinguishers
3. Identify Fire Signs
4. Identify potential fire hazards in workspace.
5. Understand fire emergency procedures and self protection measures.

Introduction

Fire presents significant risk to businesses. It can kill or seriously injure employees or visitors and can damage or destroy buildings, equipment and stock. Many businesses fail to continue operation following a severe fire.



Fire Prevention Goals

1. Life Safety

The primary goal of fire safety efforts is to protect building occupants from injury and to prevent loss of life.

2. Property Protection

The secondary goal of fire safety is to prevent property damage.

3. Protection of Operations

By preventing fires and limiting damage we can assure that work operations will continue.

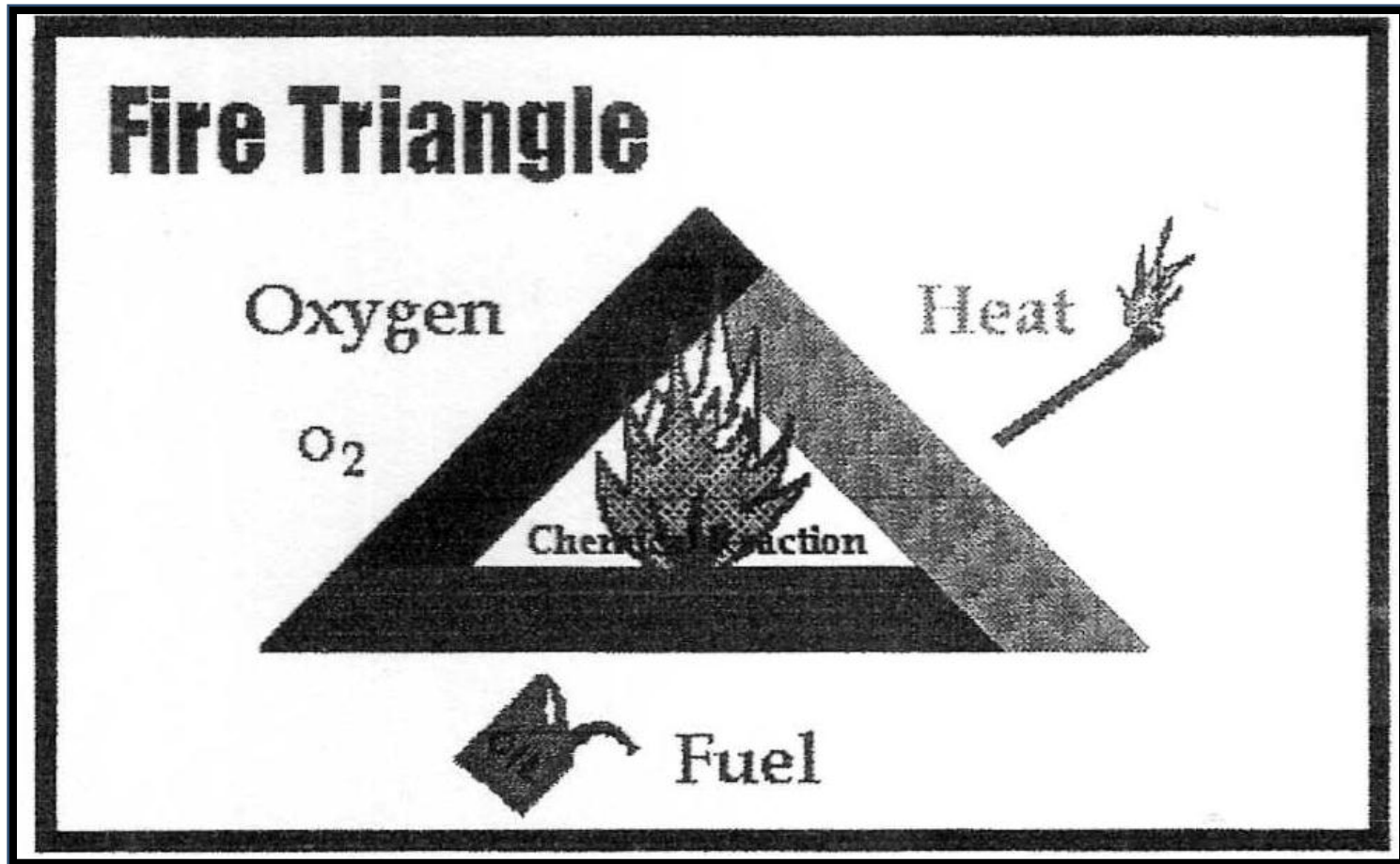
What is Fire?

Fire is a fast chemical reaction (oxidation) between a combustible substance and oxygen accompanied by the evolution of heat.

Stages of Fire

1. Incipient
2. Smoldering (“**Smoke**”)
3. Flame
4. Heat

The Fire Triangle



METHOD OF FIRE EXTINGUISHMENTS

- METHOD OF FIRE EXTINCTION IS THE reverse order to its formation . As the triangle A represents the three factors of combustion is simply to take such steps as to destroy the triangle by removing its sides one by one or simultaneously . However the removal of one of these sides there can be no fire .

Fire extinction is based on these simple principles, so the basic methods of putting out a fire are ;

(1) STARVATION ; removal of fuel or combustible materials

(2) SMOTHERING ; removing the air or oxygen

(3) COOLING ; removing the heat

Starvation is seldom practicable, so smothering and cooling are the methods most commonly used

CAUSES OF FIRE

- ANALYSIS SHOW THAT FIRES ARE CAUSED UNDER THREE MAIN HEADINGS
- Carelessness
- Accident
- Willful Act

*ACCIDENT *WILLFUL ACT

➤ ACCIDENT

- Explosion
- Faulty machinery or equipment
- Earth quake
- Thunder storm etc.

➤ WILLFUL ACT

- Intent to defraud company
- Intent to destroy evidence of serious crime
- Instigation by jealous competitor or political opponents

Classes of Fire



Class A: : Wood, paper, cloth, trash, plastics—solids that are not metals



Class B: Flammable liquids—gasoline, oil, grease, acetone. Includes flammable gases.



Class C: Electrical—energized electrical equipment. As long as it's "plugged in."



Class D: Metals—potassium, sodium, aluminum, magnesium. Requires special extinguishing agents.

Fire Protection Systems

Fire Extinguishing Systems



Automatic Sprinkler Systems



Hose Reels



Water Hydrant

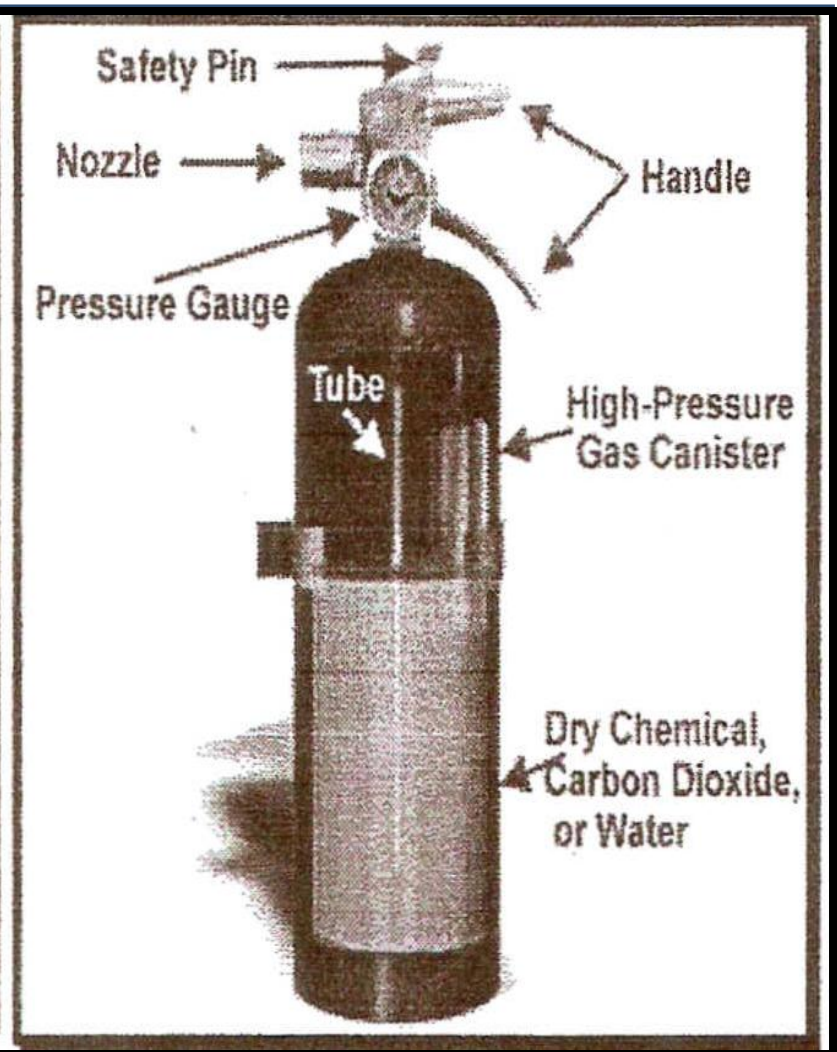
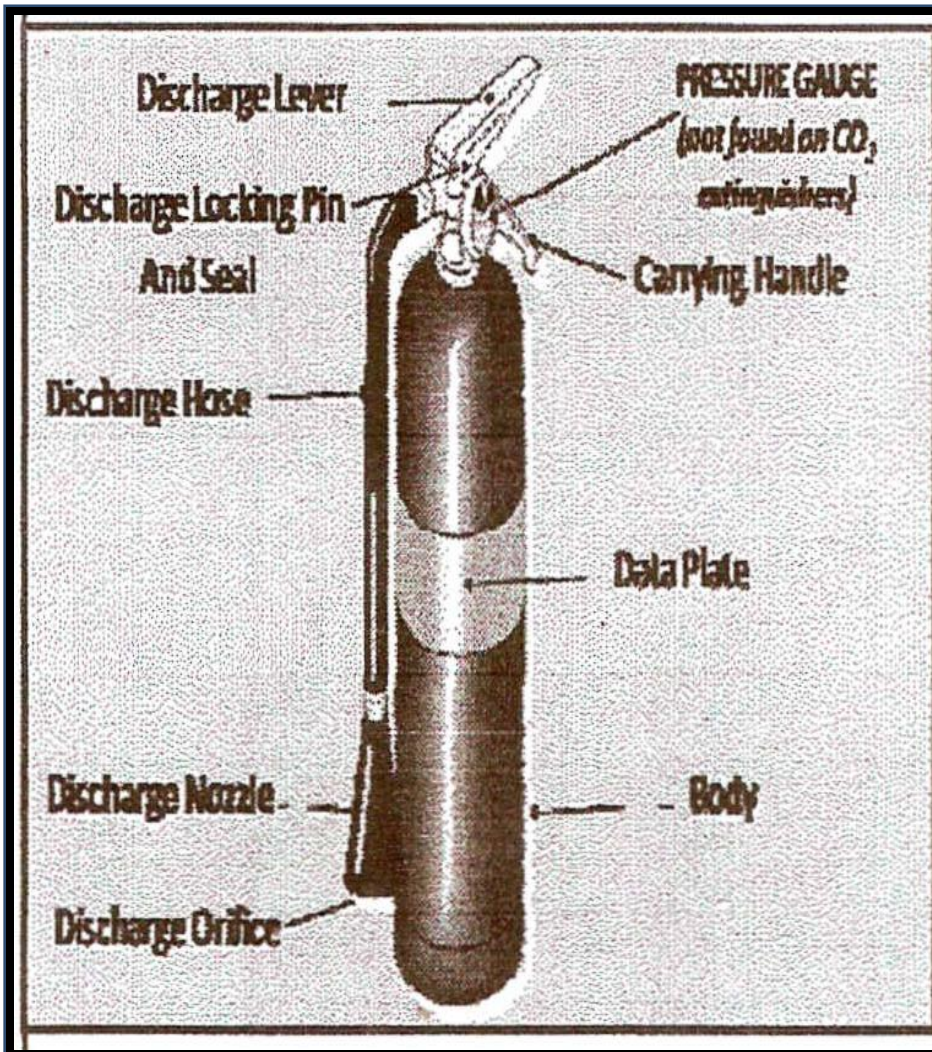


Portable Fire Extinguishers




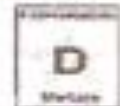





Fire Brigade Vehicles

Portable Fire Extinguishers



Symbols on Portable Fire Extinguishers

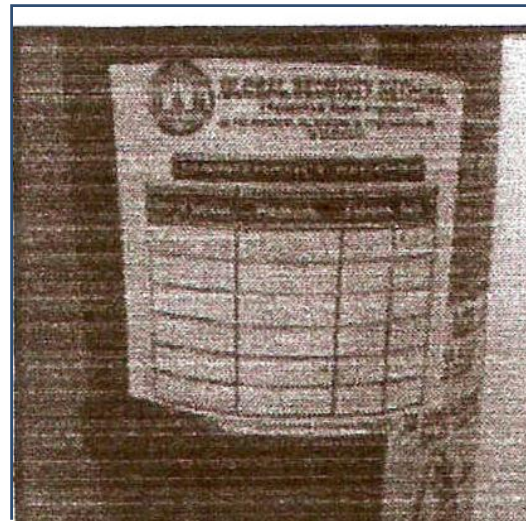
A	This symbol indicates an extinguisher that may be used on ordinary combustibles including wood, paper, plastic or cloth. This symbol may be found on water, foam or multipurpose extinguishers.	
B	This symbol indicates an extinguisher that is appropriate for use on flammable or combustible liquids.	
C	This symbol indicates an extinguisher that may be used on fires involving energized electrical equipment.	
D	This symbol indicates an extinguisher that may be used on some types of combustible metals including magnesium, sodium, and potassium.	
<p>An "ABC" extinguisher will have a label like this, indicating it may be used on Class A, Band C fires.</p> <p style="text-align: center;">    </p>		

Installation and Maintenance

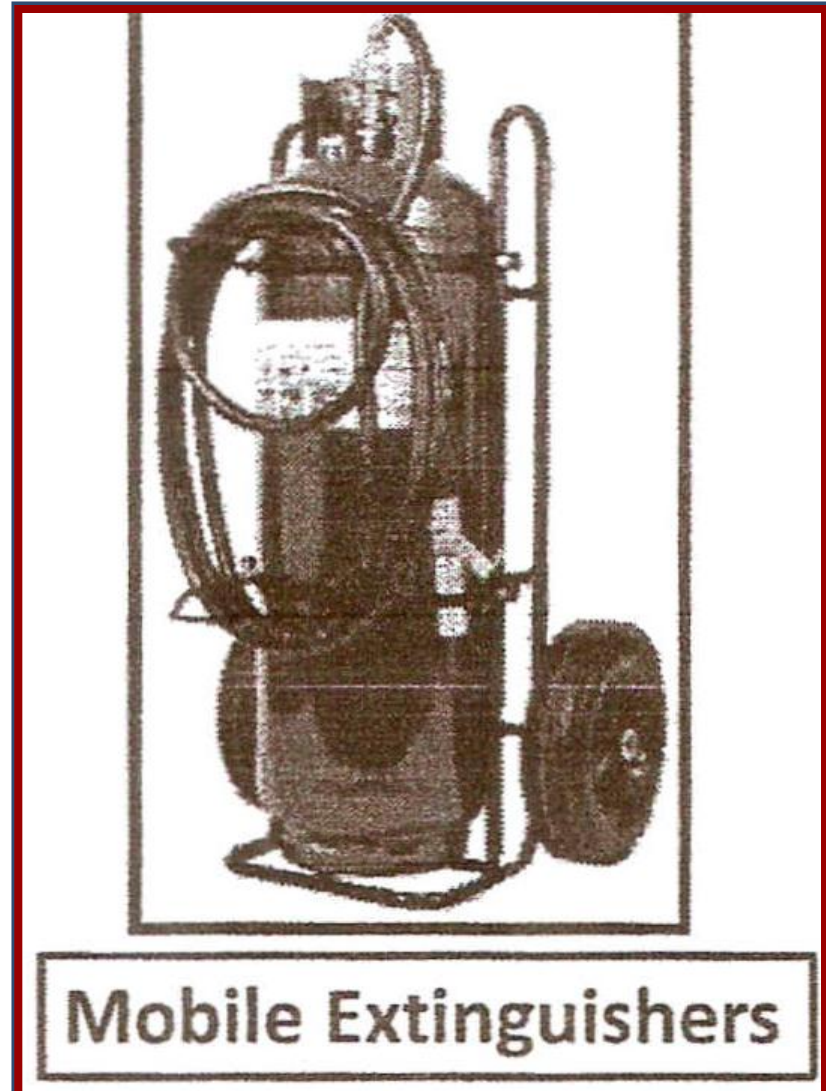
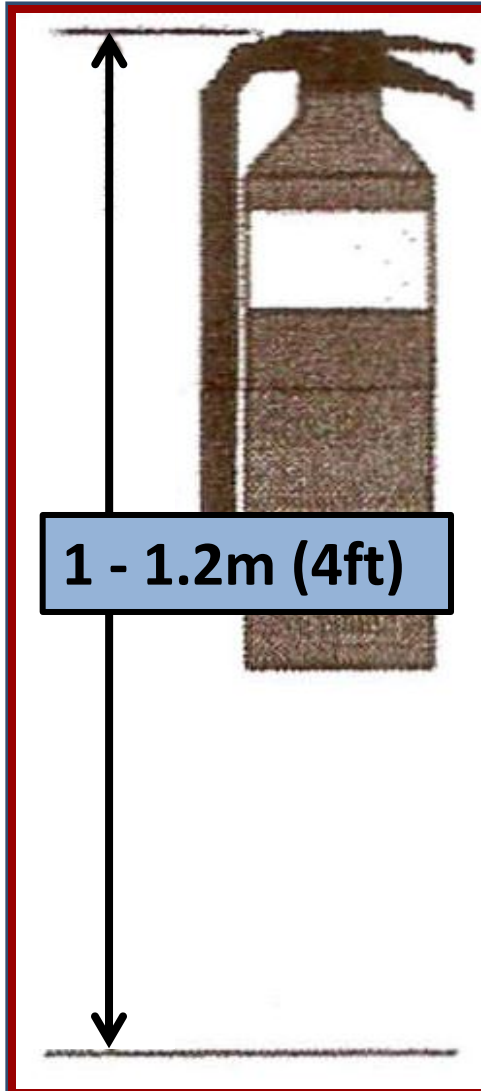
Visual Inspection

Monthly inspection of extinguishers should include a check of the following items:

1. Proper location in designated area.
2. No obstruction to access or visibility.
3. Operating instructions on nameplate legible and facing outward.
4. Seals and tamper indicators not broken or missing.
5. Examine for obvious physical damage, corrosion, leakage, or clogged nozzle.
6. Pressure gauge reading or indicator in the operable range or position.



Mounting of Portable Fire Extinguishers



How to use Portable Fire Extinguishers

P

Pull the pin

A

Aim low at the base of flames

S

Squeeze the handle

S

Sweep side to side



How to use Portable Fire Extinguishers

1. Ensure extinguishers are suitable for the purpose and of sufficient capacity for the fire risks on the premises
1. The extinguisher must match the type of fire being fought. Extinguishers that contain water are unsuitable for use on grease or electrical fires.
2. Ensure the right types of extinguishers are located close to the fire hazards and that users can gain access to them without exposing themselves to risk
3. The extinguisher must be large enough to put out the fire. Many portable extinguishers discharge completely in as few as 10 to 30 seconds.
4. The operator must know how to use the extinguisher. There is no time to read directions during an emergency.
5. The operator must have a clear escape route that will not be block by fire.

Rules for Fighting Fires

Fires can be very dangerous and you should always be certain that you will not endanger yourself or others when attempting to put out a fire. **For this reason, when a fire is discovered...**

1. Raise alarm and /or activate the building fire alarm, Call emergency number as displayed on Fire notice.
2. Assist any person in immediate danger to safety, if it can be accomplished without risk to yourself.

If the fire is small (and **Only** after having done these 2 things), you may attempt to use an extinguisher to put it out.

However

Rules for Fighting Fires

Before deciding to fight the fire, keep these things in mind:

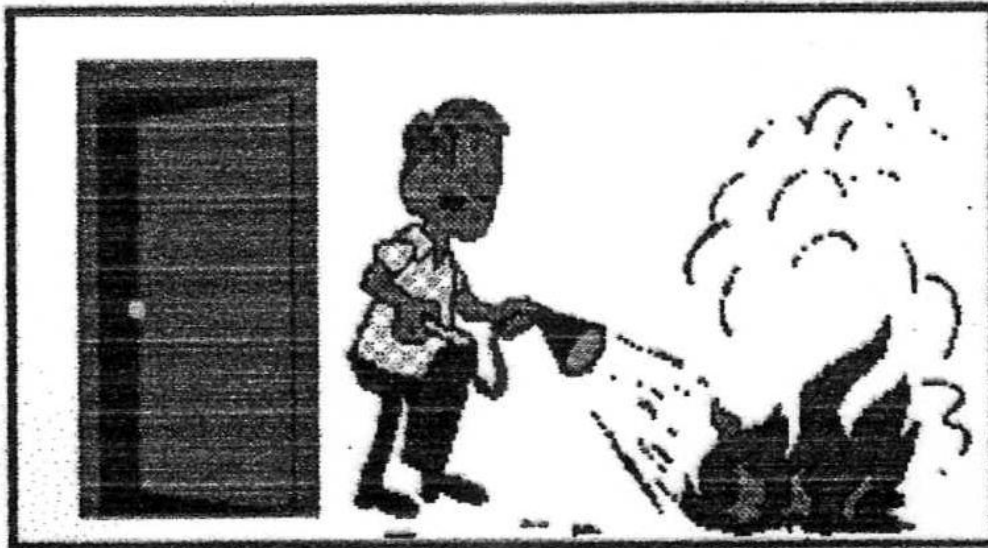
1. **Know what is burning.** If you don't know what's burning, you won't know what kind of extinguisher to use.
2. **Even if you have an ABC fire extinguisher,** there may be something in the fire that is going to explode or produce toxic fumes.
3. **Is the fire spreading rapidly beyond the point where it started?** The time to use an extinguisher is at the beginning stages of the fire.
4. If the fire is already spreading quickly, it is best to simply evacuate the building.

Do not fight the fire if:

1. You don't have adequate or appropriate equipment.
2. You might inhale toxic smoke.
3. Your instincts tell you not to.

Rules for Fighting Fires

The final rule is to always position yourself with an exit or means of escape at your back before you attempt to use an extinguisher to put out a fire.



In case the extinguisher malfunctions, or something unexpected happens, you need to be able to get out quickly. You don't want to become trapped.

Fire Safety Safe Practices

- 1. Keep your work area clean.**
- 2. Chemical & flammable liquids should be carefully stored in approved containers according to the manufacture's instructions.**
- 3. Make sure wires, cords and machinery are in good shape and not overloaded.**
- 4. Never strike a match, lighter or smoke in areas that can initiate a fire. Do so only in designated areas.**
- 5. Obey all fire safety signs**
- 6. Keep exits free of obstacles to escape easily. Make sure the exits are marked with proper signs.**
- 7. Be aware of potential dangers like gas leaks, hazardous chemicals or oil.**
- 8. Become familiar with emergency action plan for fires**
- 9. Elimination of Ignition Sources**

Thank You