

Fire & Safety, Environmental Awareness and Its Importance

BY

Mohammad Sarwar

Manager Fire & Safety Systems

MSc. Environmental & Safety Management

What is a **FIRE** ?



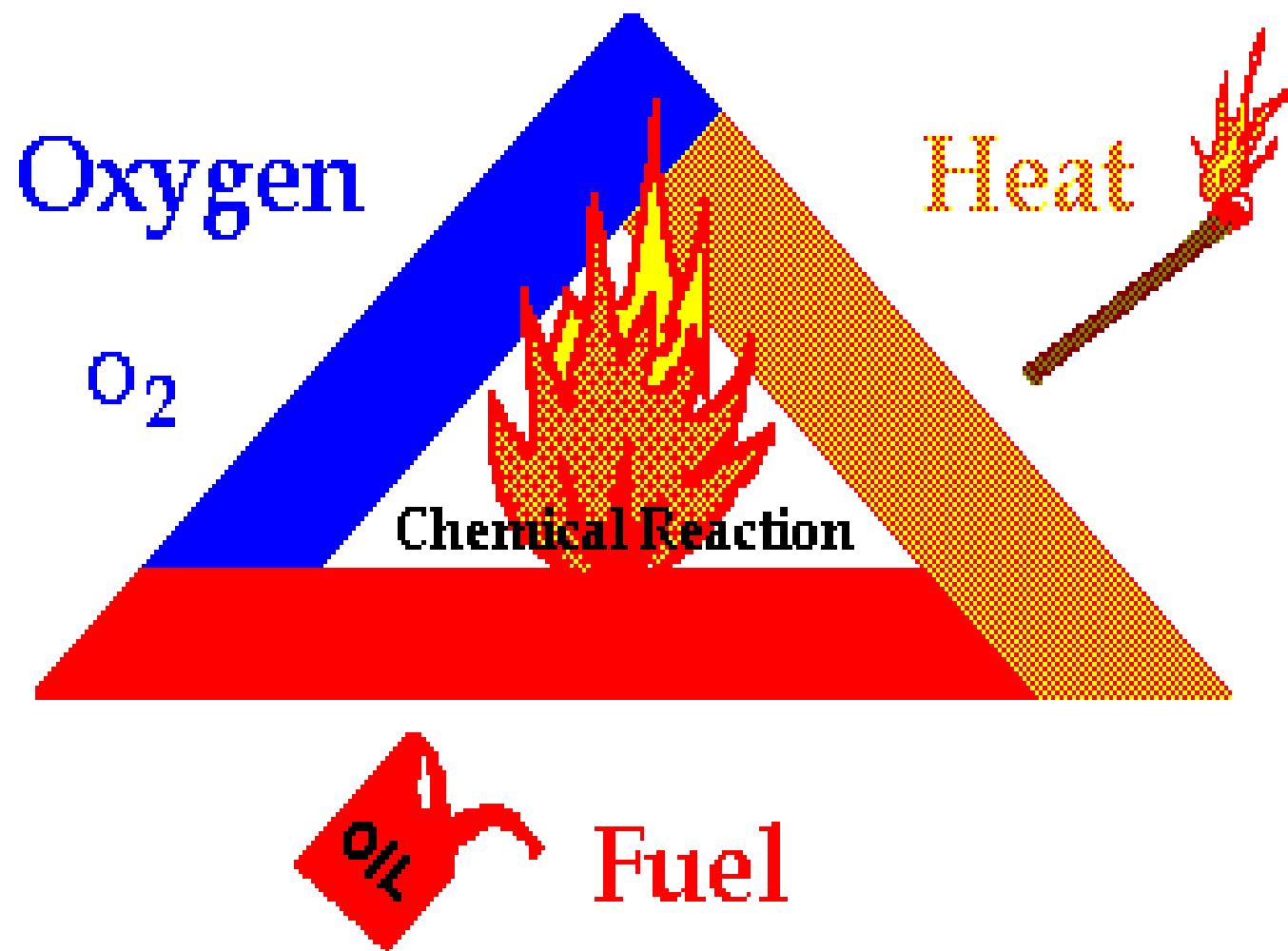
A **Fire** is a combination of a burnable substance with **Oxygen** (AIR).

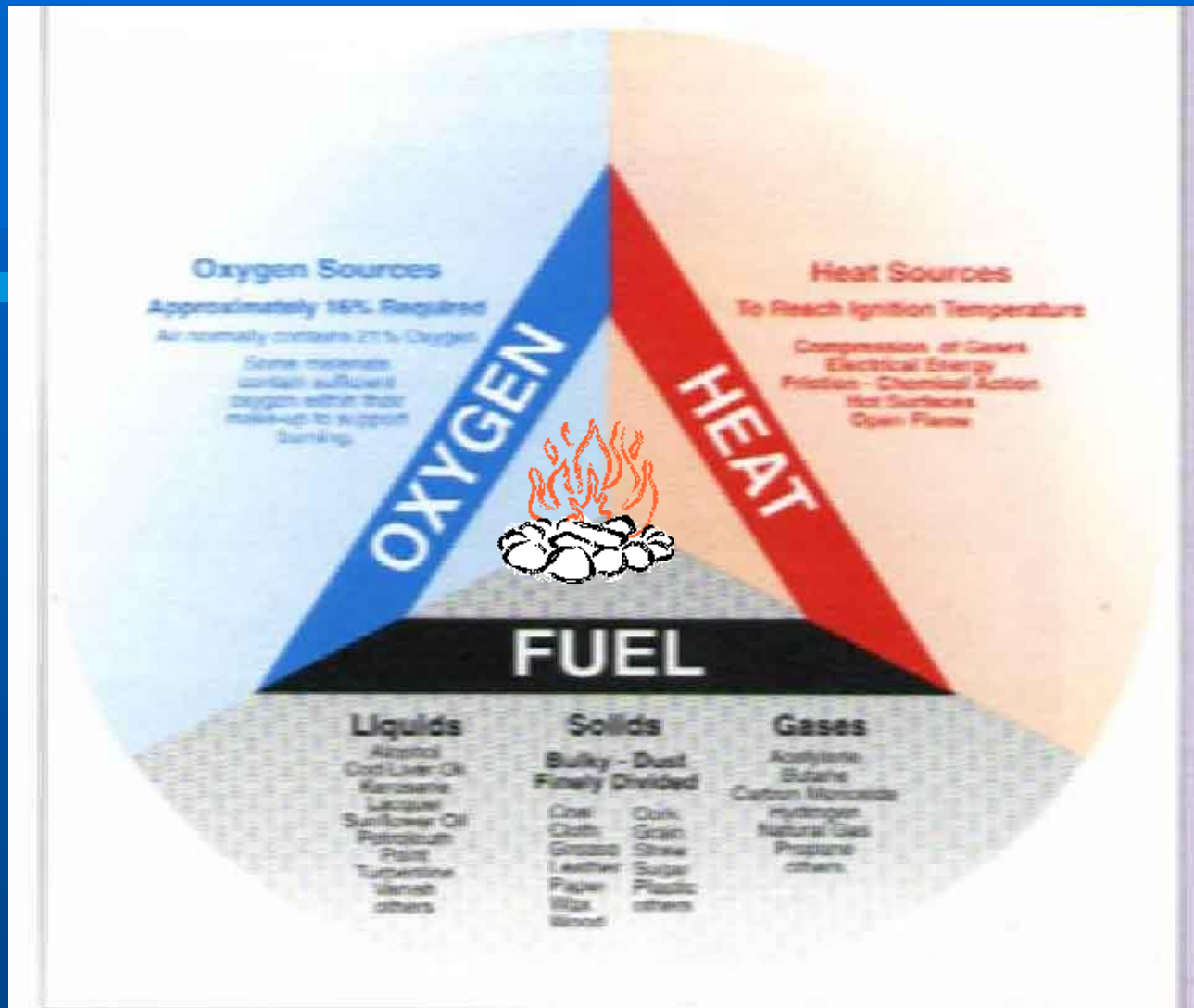


For a Fire to burn Following factors are needed:



Fire Triangle





FIRE will not break out if any of the above is eliminated

Prevent them from getting together

Prevention

- Prevention is based on minimizing one of the components of the "Fire Triangle".

How does a **FIRE** break out ?

- Natural Phenomena (**Lightning**)
- Human Carelessness (smoking materials, cooking)
- Technological failure (electrical wiring & appliance faults)

Natural Phenomena

- Lightning
- Earthquakes
- Storms



Human Carelessness

- Fires in cookers and stoves etc
- Combustible material left close to sources of heat
- Careless disposal of cigarettes ,the contents of pipes or matches
- Rubbish , paper or other materials that can easily catch fire
- The hot work hazard
- Carelessness by contractors



Technological failure

- Faulty electrical wiring, plugs, sockets which are in poor condition
- Services and installations are not correctly designed specified, constructed, checked and commissioned
- Electrical equipment left switched on when not in use
- Obstruction to the ventilation of machinery, office equipment
- Building and maintenance work

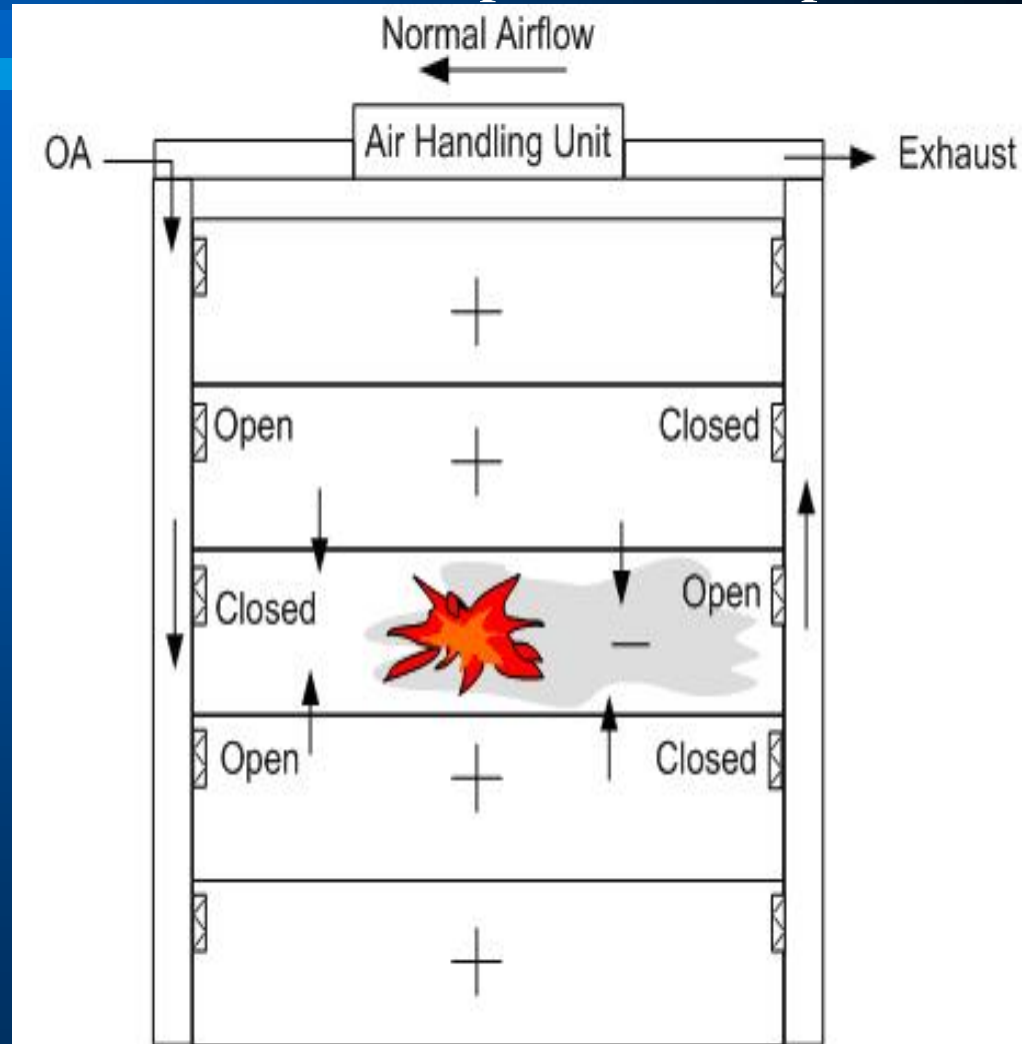
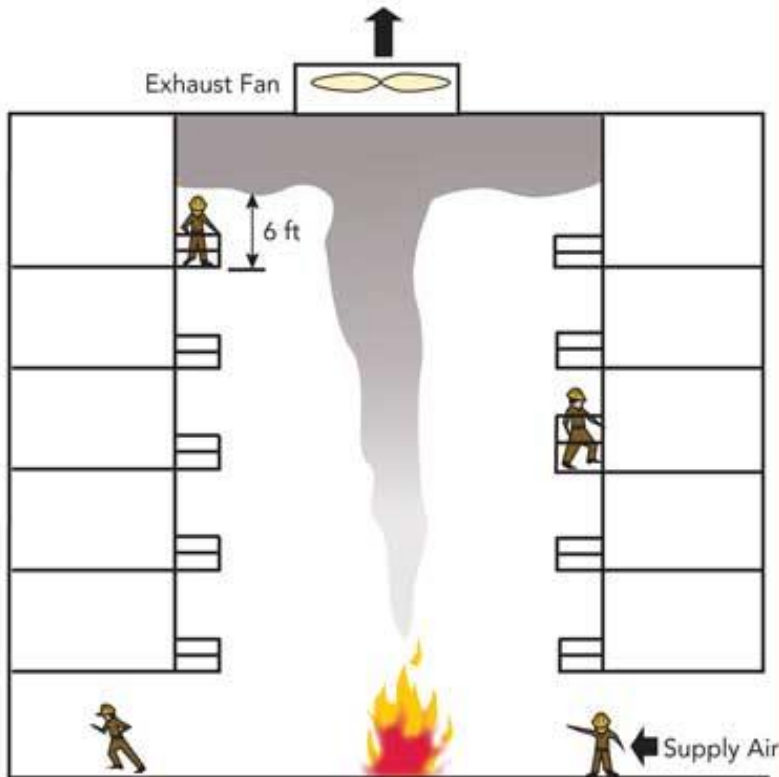
In Case of Fire :-

- All Building fire systems, Data Centre suppression systems should automatically work.
- Also:-
 - 1) Lifts-(should settle down on ground Level)
 - 2) Exhausts fans – (should turn **on**)
 - 3) Air Handling Units – (should turn **off**)
 - 4) Supply of flammable fluids – (should stop)
 - 5) AC Dampers – (should close for return)

EXAMPLE – 1

In Case of fire fresh air damper along with fresh air fan will be closed & AHU will be shut off then Exhaust damper will be open along with Exhaust air fan.

Figure 2. Exhaust Method



EXAMPLE – 2

Example:

3 story building with a flat roof hatch in the stairwell and 3 lobby windows.

The escape route is kept clear by creating ventilation in the lobby to allow occupants to escape and the fire brigade smoke free access

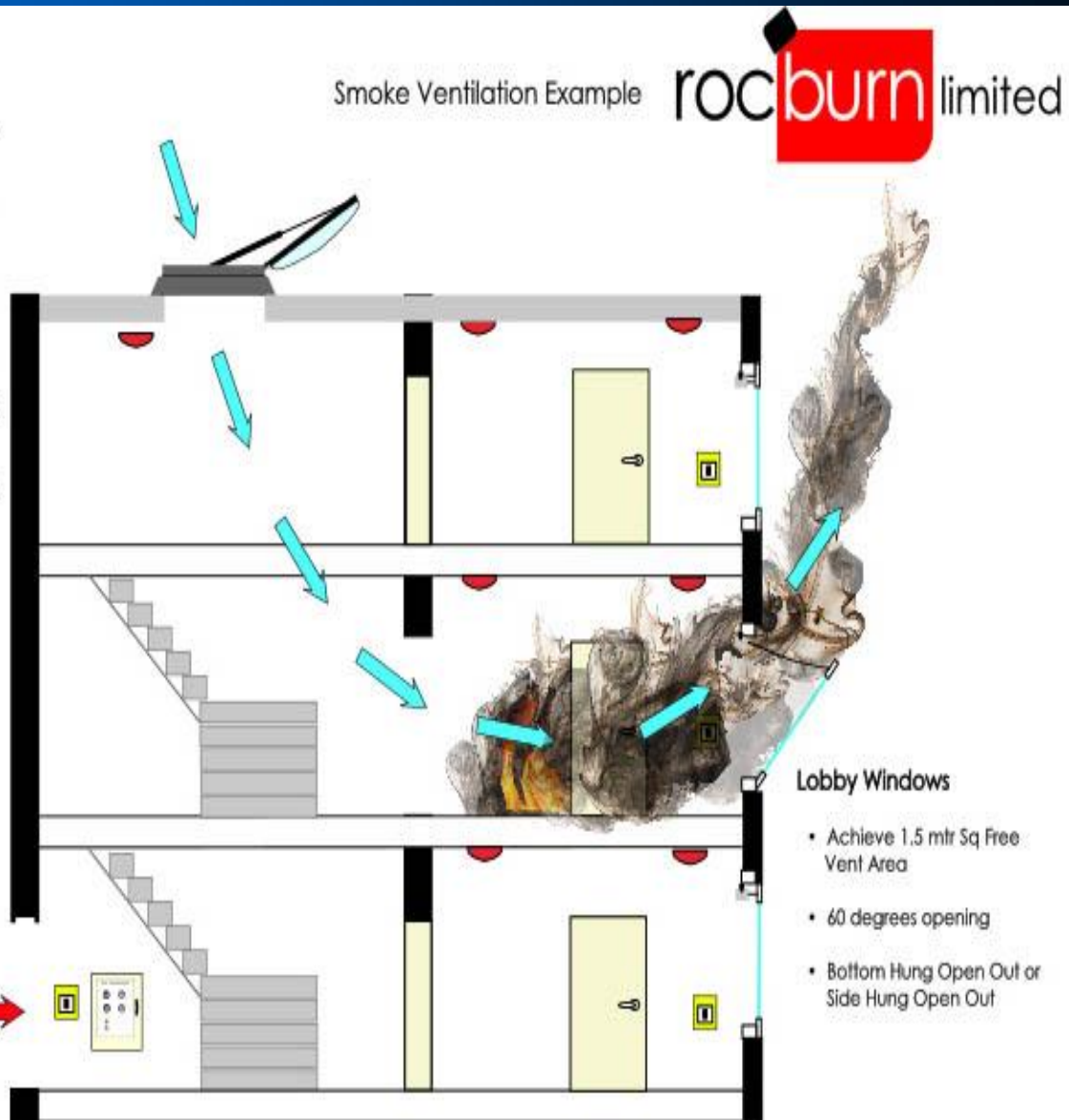
Stairwell Window

- Achieve 1 mtr Sq Free Vent Area
- Bottom or side hung open out
- 60 degrees opening

Roof Vent or Louvre

- Achieve 1 mtr Sq Free Vent Area
- 140 degrees opening for BS EN 12101 for roof vents

Fire Brigade Enter



How a **FIRE** can be put off ?



FIRE will go off if any one of the below items are eliminated

Fuel (Starvation)

FIRE

Oxygen (Smothering)

Heat (Cooling)

Types of FIRE's :

There are four types of FIRE's involved :

1. Solid FIRE's – Burning of solids such as Wood, Paper, etc (These are called class A FIRE's)
2. Fluid FIRE's - Burning of liquids such as Oil, Petrol, Spirits, etc (These are called class B FIRE's)
3. Gas FIRE's – Burning of Gases such as LP, Butane, Acetylene, etc (These are called class C FIRE's)
4. Metal FIRE's – Burning of metal such as Magnesium, Copper, etc (caused by electrical short circuits, etc) (These are called class D FIRE,s)

How to fight class **A** FIRE :

Method – cooling with water



How to fight class **B FIRE** :

Method – Smothering to exclude **Oxygen** (AIR) with CO2, Dry powder, foam, or blanketing



How to fight class **C** FIRE :

Method – Smothering to exclude **Oxygen** (AIR) with CO2, Dry powder, foam, or blanketing



How to fight class **D FIRE** :

Method – Smothering with
use of bi-carbonate dry talc,
Dry sand



TYPES OF FIRE EXTINGUISHERS

their uses and their colour coding according to BS EN 3: 1996



WATER



POWDER



FOAM



**CARBON
DIOXIDE (CO₂)**

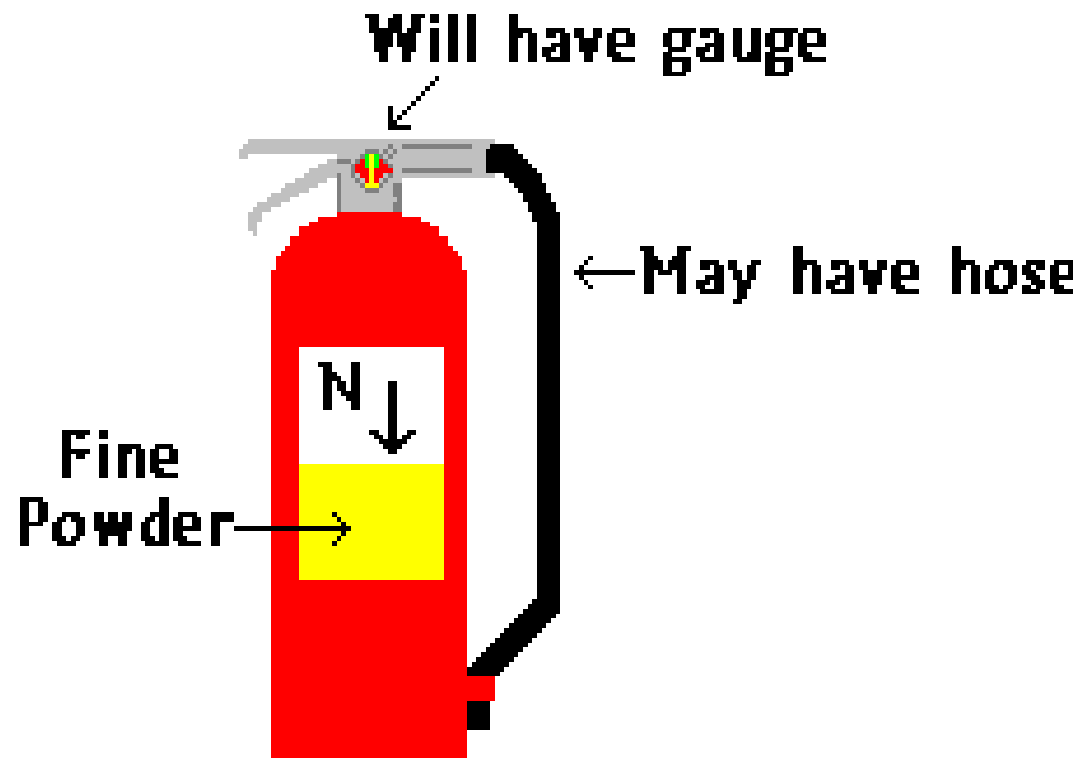
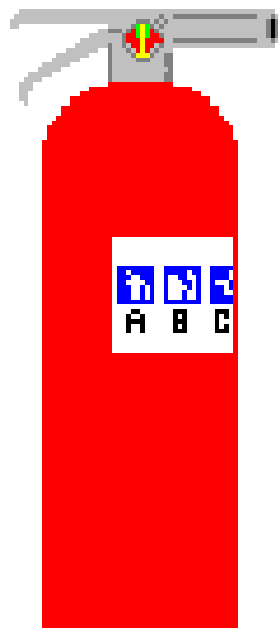


HALON

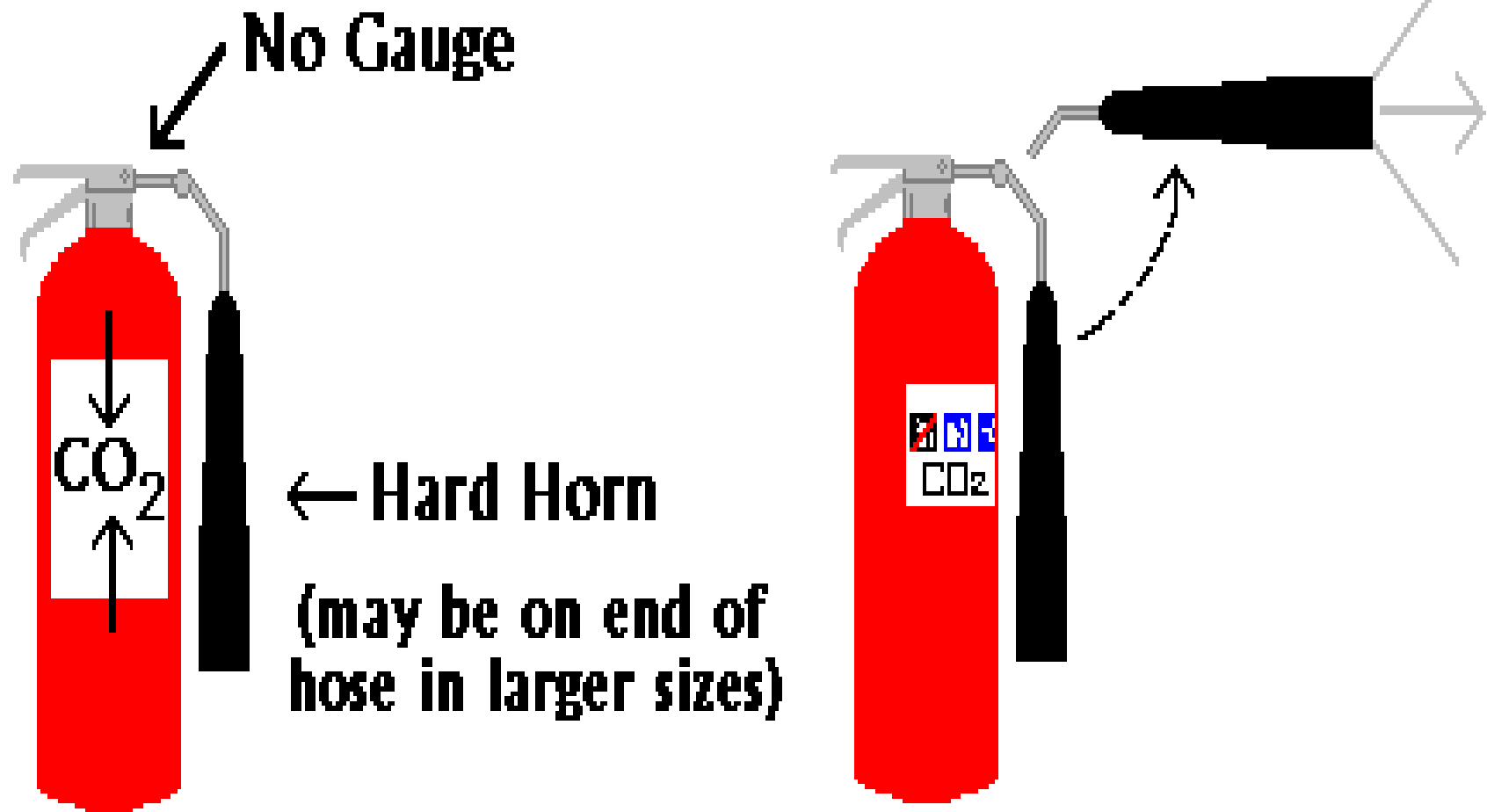
For wood, paper, textile and solid material fires	For liquid and electrical fires	For use on liquid fires	For liquid and electrical fires	For liquid and electrical fires
DO NOT USE on liquid, electrical or metal fires	DO NOT USE on metal fires	DO NOT USE on electrical or metal fires	DO NOT USE on metal fires	DO NOT USE on metal fires

The contents of an extinguisher is indicated by a zone of colour on the red body of the extinguisher.

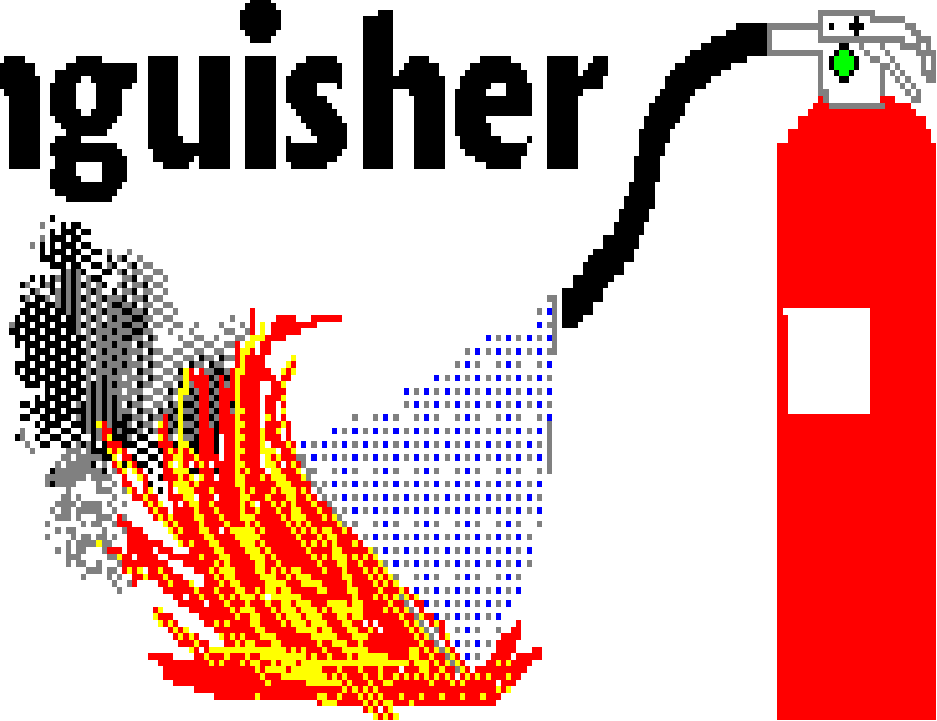
Dry Chemical Extinguisher (ABC)



Carbon Dioxide Extinguisher



How to Use a Fire Extinguisher



Fire Extinguishers

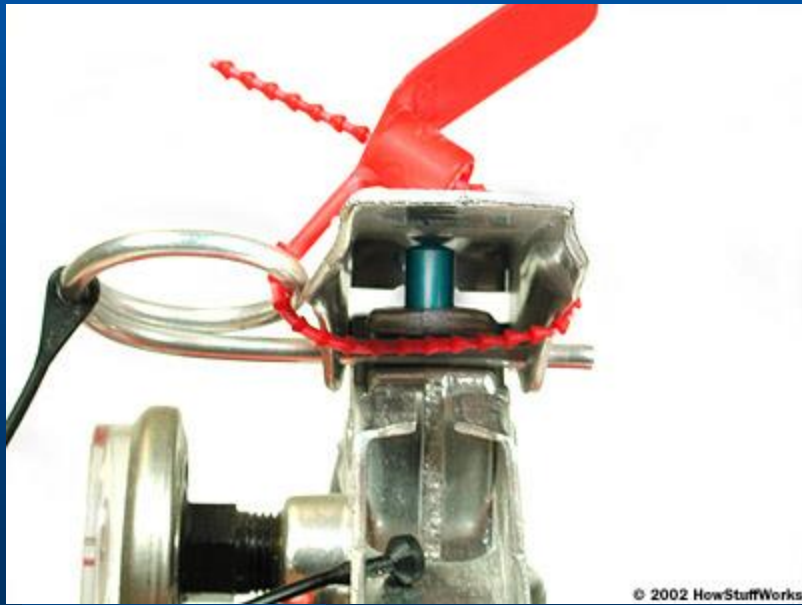


- Remember this when using an extinguisher - **P.A.S.S.**
- **P**ull the pin.
- **A**im the nozzle.
- **S**queeze the handle.
- **S**weep side to side at the base of the fire.
- **NOTE:** If, when using a fire extinguisher, the fire is physically larger than you can safely handle, evacuate the area and notify others by activating the emergency pull station and call 16 .



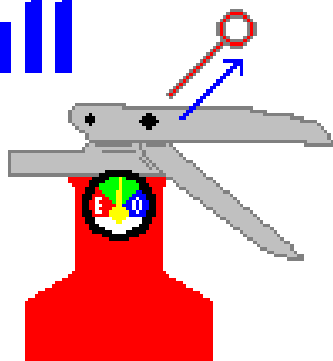
© 2002 HowStuffWorks

© 2002 HowStuffWorks



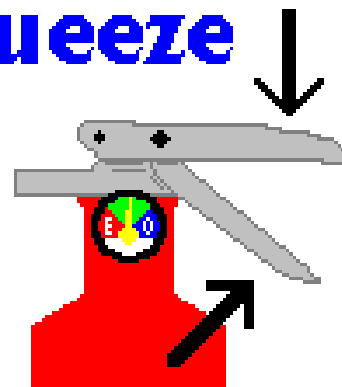
© 2002 HowStuffWorks

Pull



the **p**in

Squeeze



the **h**andle

Sweep

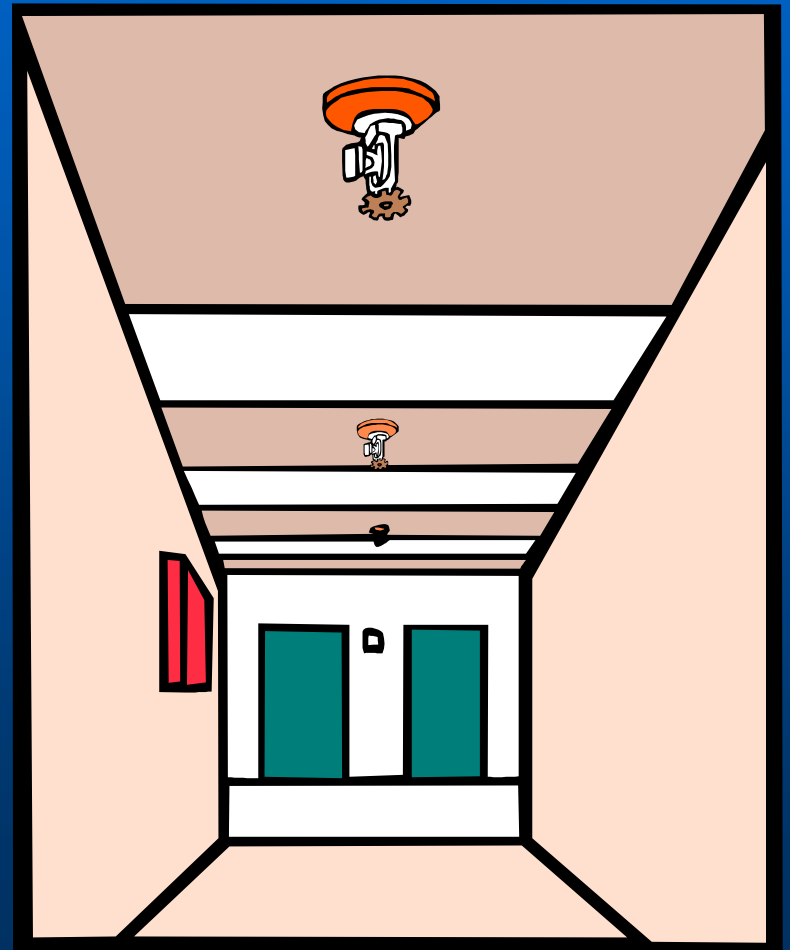


side to side

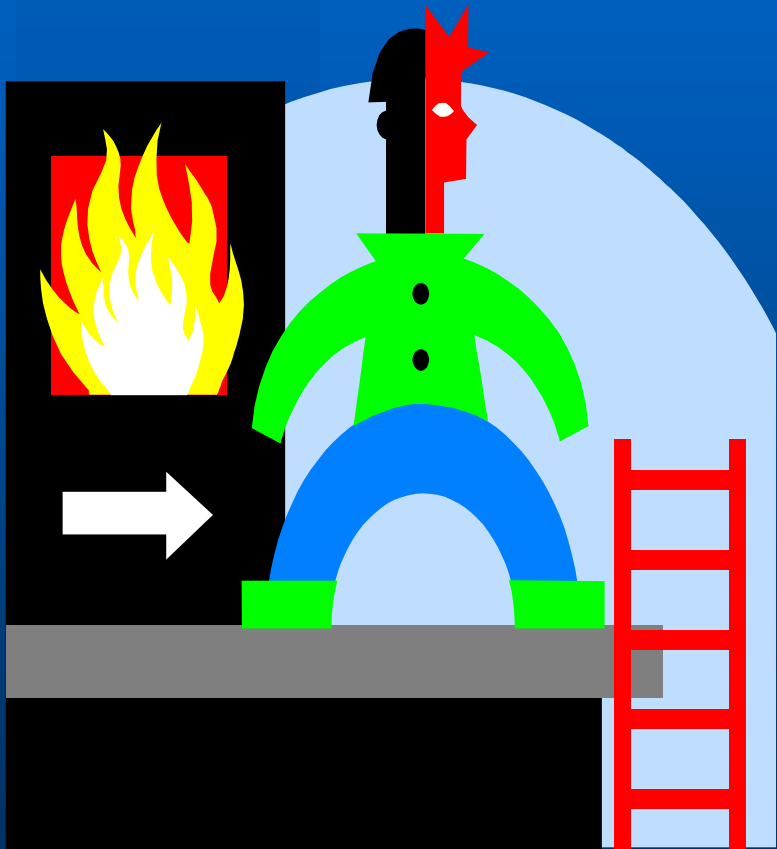


Prevention

- Other **fire** prevention methods include:
 - Heat and/or smoke detectors.
 - Automatic fire sprinkler systems.
 - Kitchen hood systems.
 - Building codes and materials.
 - Flame resistant furnishings and materials.

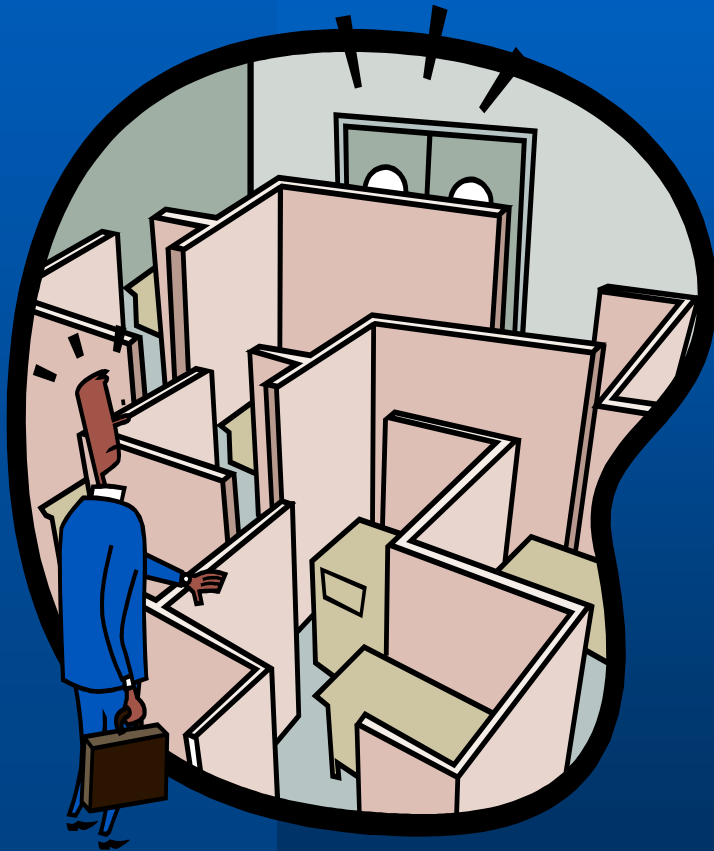


Exit Drills



- Exit Drills
- It requires **monthly** fire drills conducted in all occupied locations of the facility including the floors/areas/warehouses.
- The fire drills should include staff from all shifts.

Evacuation



- Primary and secondary evacuation routes should be established, and all employees should be drilled to use either route.
- Exits should be clearly marked and all signs lit .

Remember “RACE”

- **R**escue - rescue employees in immediate danger.
- **A**lert - yell out “**F**ire”, Break fire glass, dial emergency phone 16.
- **C**ontain - Close doors with wet towels.
- **E**xtinguish/Evacuate - Extinguish small fires, evacuate clients, if possible.

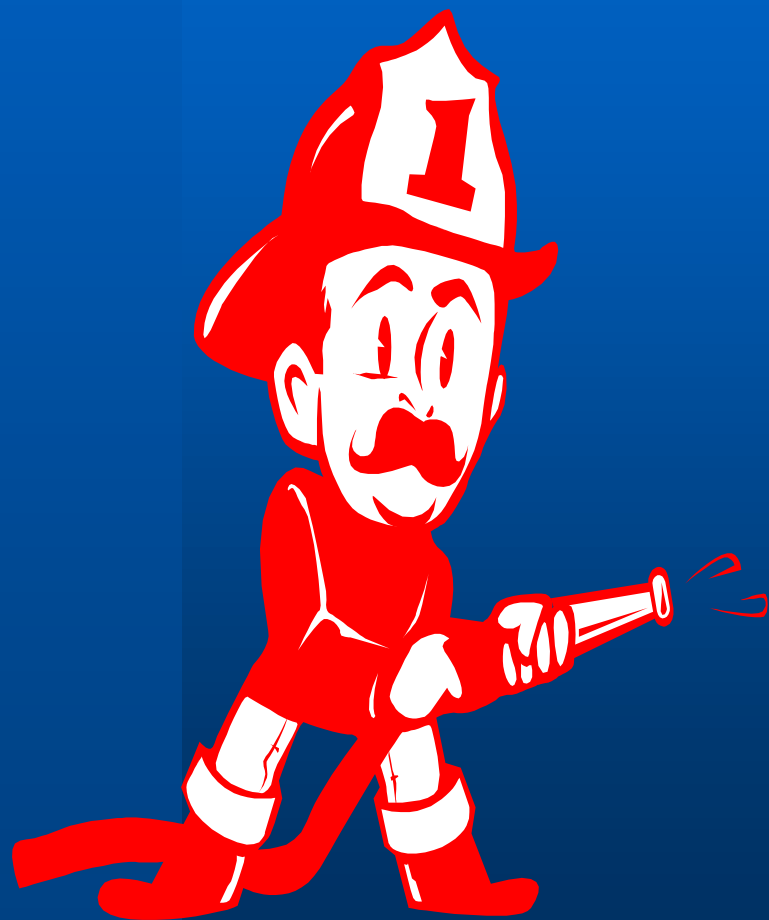
Awareness of working tools

- Electrical Tools should be insulated properly.
- Tools should be well-maintained
- Old tools which are in poor conditions such as being rusted, greasy beyond usable, uninsulated should be discontinued.

Safety Precautions

- At industrial workshops safety goggles, safety gloves, safety shoes, safety helmets, proper gas masks must be used.

THE END



Thank You 2019