



# Fire Prevention and Fire Safety

Health Worker Safety Training Module 5



# Topics

- Workplace fire hazards
- Fire prevention measures
- Fire emergencies and evacuation
- Responding to fires



# Workplace fire hazards

# Workplace Fire Hazards

- Overloaded electrical outlets and extension cords
- Misuse of space heaters
- Mishandling of flammables
- Improper storage of combustibles
- Unsupervised cooking
- Improper disposal of smoking materials on grounds





# Fire Prevention Measures

# Fire Prevention Measures

- Know the locations of emergency evacuation routes, fire extinguishers and emergency and exit lights
- Keep exits, waiting areas, corridors, and stairwells clear of obstructions at all times.
- Report any tampering with the fire alarm, smoke detection and suppression systems
- Ensure that fire doors are closed at all times
- Do not use candles or any other open flame devices
- Respect the “No Smoking” policy

# Housekeeping

- Furnishings, decorations, combustible objects, or flammables must not block exits, access to exits, or any hallways or stairwells
- Dispose of all trash as soon as possible in trashcans or dumpsters.
- Waste materials must never be piled in corridors or stairways while awaiting removal.
- Flammable and combustible materials should be present in the work area only in the quantities required for the day's job.

# Storage of flammable materials

Flammable and hazardous materials:

- May not be stored within 15 meters of an open flame or heat source
- Must not obstruct evacuation routes or be stored under stairs
- Must be stored on separate shelves or rooms according to their reactive properties



# Electrical Wiring and Appliances

- Supervisors should periodically inspect all electrical equipment and cords to ensure proper use and safe conditions.
- The use of extension cords should be minimal and used only when a flexible temporary connection is necessary.
  - The cord and the outlet should be checked periodically to ensure overheating is not occurring.
  - Extension cords cannot be used for fixed wiring, and should never be tacked, stapled, tied, hidden under rugs.
- Electrical equipment should be properly grounded. If any evidence is found of frayed, cracked or damaged wiring or electrical outlets, the equipment affected should be taken out of service until repairs are made.

# Exits

- Blocked exits are among the most preventable causes of fire deaths
- An exit path consists of:
  - Corridors, stairways, and/or aisles leading to an exit door
  - The exit door
  - The path outside of the exit door that leads away from the building
  - Associated emergency lighting and signage
- All exits must be marked with an illuminated EXIT sign





# Fire emergencies and evacuation

## A Fire Emergency Exists Whenever:

- A building fire evacuation alarm is sounding
- There is presence of smoke, or the odor of burning
- An uncontrolled fire, or imminent fire hazard occurs in any building or area of the campus
- There is a spontaneous or abnormal heating of any material, an uncontrolled release of combustible or toxic gas or other material, or a flammable liquid spill



**The fire alarm should be immediately activated in the event of a fire, or if smoke is seen or smelled**

# Evacuation procedures

- Activate the fire alarm system
- Shut down any experiments or procedures that should not be left unattended.
- Evacuate the building immediately and in an orderly manner. The last occupant to leave a room should close the door leading to the corridor.
- **Never use the elevators!**
- All members of hospital staff are responsible, within the limits of their abilities, to assist those individuals requiring assistance prior to, during, or after an emergency.





# Responding to Fires

# Use of Fire Extinguishers

- **Trained staff** may attempt to extinguish small fires only if:
  - It can be fought effectively with available extinguishers
  - There is no life safety hazard to the staff member
  - The action will not endanger the lives of others
- The proper selection of a fire extinguisher and knowledge of its operation are critical to containing and extinguishing the fire, and preventing injury to the user.



Photo by BMC Staff



**Always call the fire department, no matter how small the fire seems to be!**

# Fire Extinguishers

- Fire extinguishers are special pressurized devices that release chemicals or water to aid in putting out a fire.
- The hospital Health Worker Safety team provides hands-on training in the use of fire extinguishers
- Value of fire extinguishers:
  - keep small fires from spreading
  - assist in fighting fires until the fire department arrives
  - may help provide an escape route



# Understanding Fire

Four things must be present at the same time in order to produce fire:

1. Enough oxygen to sustain combustion
2. Enough heat to raise the material to its ignition temperature
3. Some sort of fuel or combustible material
4. The exothermic chemical reaction that is fire



Fire extinguishers work by taking one or more of these elements

# Rules for Fighting Fires

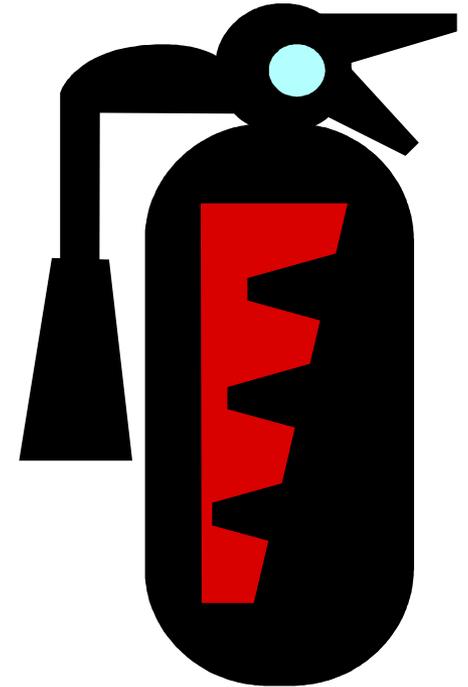


Never fight a fire if:

- 1. You do not know what is burning and you do not know what type of extinguisher to use***
  - Even if you have an ABC (multi-purpose) extinguisher, there may be something in the fire, which could explode or produce toxic smoke.
  - If you do not know what is burning, wait for the fire department
- 2. The fire is spreading rapidly beyond the spot where it is started***
  - The time to use the fire extinguisher is in the beginning stages of the fire.
  - If the fire is spreading quickly, it is best to simply evacuate the building, closing windows and doors as you leave.

# Types of Fire Extinguishers

- The extinguisher must be appropriate for the type of fire being fought.
- Multi-purpose fire extinguishers, labeled ABC, may be used on three classes of fires: A, B, and C.
- Using the wrong type of extinguisher can cause harm to a person and make the fire worse.



# Classes of Fires and Extinguishing Materials

Class of fire	Materials which may cause each class of fire	Extinguishing media required for each class of fire
<b>A</b>	Ordinary combustible materials like wood, paper, rags, rubbish, rubber and plastics	Water spray and sprinkling system. Special dry chemicals douse the flames quickly and prevent the spreading of fire
<b>B</b>	Flammable or combustible gases and liquids like gasoline, kerosene, thinners, paints, grease and similar materials	Materials which limit the supply of air, like carbon dioxide, dry chemicals, foam and halogenated hydrocarbons.  Use of water may spread the fire; fine water spray can be used to cool the containers which are likely to catch fire

# Classes of Fires and Extinguishing Materials

Class of fire	Types of materials which may cause it	Extinguishing media required to fight this class of fire
<b>C</b>	Fires involving or near electrical equipment	<p>Non-conducting materials, such as carbon dioxide or dry powders.</p> <p>Water and foam should not be used as they may cause short circuiting, electrical shock and damage to the equipment</p>
<b>D</b>	Fires involving active metals like magnesium, sodium, titanium, potassium, zirconium	<p>Special extinguishing agents are available for such fires</p> <p>Normal extinguishing agents should not be used as they may increase the intensity of the fire</p>
<b>F</b>	Grease in commercial cooking equipment	Some fire extinguishers can fight F-class fires with a wet chemical agent that turns the grease to soap

# How to Use a Fire Extinguisher

To remember how to use a fire extinguisher remember the acronym **PASS**, which stands for **PULL**, **AIM**, **SQUEEZE**, and **SWEEP**.



**Pull** the pin to discharge the fire extinguisher.

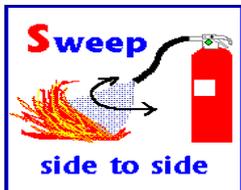


**Aim** at the base of the fire.

If you aim at the flames, the extinguisher agent will fly right through and do no good. You have to hit the fuel.



**Squeeze** the top handle or lever. This depresses a button that releases the pressurized extinguishing agent in the extinguisher.



**Sweep** from side to side until the fire is completely out.

Start using the extinguisher from a safe distance away, moving forward sweeping the nozzle from side to side. Once the fire is out, keep an eye on the area in case it re-ignites.



**Thank You**

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