

Section 1 Fire Safety

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1.1 How Fires Start

- ❖ Fire is a chemical reaction involving rapid oxidation or burning of fuel. It needs four elements to occur:
 - ❖ Fuel – solid, liquid, or gas
 - ❖ Oxygen – we breathe 21%, fire needs only 16%
 - ❖ Heat – increases temperature of the fuel to the point where sufficient vapors are given off for ignition to occur.
 - ❖ Chemical Reaction – chain reaction occurs when the other three elements are present in the proper conditions and proportions.

1.2 Classification of Fires

- ❖ Class A – wood, paper, cloth, rubber, and some plastics.
- ❖ Class B – flammable or combustible liquids such as gasoline, kerosene, paint, acetone, ethanol, and propane.
- ❖ Class C – energized electrical equipment such as stir plates, Mel-temps, and outlets.
- ❖ Class D – combustible metals, magnesium, titanium, potassium, and sodium burn at high temperatures and may react violently with water or other chemicals.

1.3 When Not to Fight a Fire

- ❖ If the fire is spreading beyond the spot where it started.
- ❖ If you can't fight the fire with your back to an escape exit.
- ❖ If the fire can block your only escape.
- ❖ If you don't have adequate fire-fighting equipment.



1.4 Extinguishing a Small Fire

- ❖ Fire extinguishers that may be used on a Class A, B, or C fire are a multi-purpose dry chemical (sodium bicarbonate) extinguisher and are an ABC extinguisher.
- ❖ These extinguishers are most useful in the laboratory environment.



1.5 How to Use a Fire Extinguisher (PASS Method)

Pull the pin.

Aim the extinguisher nozzle at the base of the flames.

Squeeze the trigger while holding the extinguisher upright.

Sweep the extinguisher from side to side, covering the area of the fire with the extinguishing agent.



1.6 Fire Fighting Safety Precautions

- ❖ Do not block your path of escape.
- ❖ If the fire is in a room or building, close any door to isolate the fire area and notify your fire department.
- ❖ Make sure the fire is out and use caution since fires can reignite.
- ❖ If the fire intensifies, the extinguisher is not effective, the extinguisher runs out of agent, or you can no longer safely fight the fire, ***leave the area immediately.***

1.7 If Someone Catches on Fire

- ❖ Stop, Drop, and Roll – this will smother the flames.
- ❖ If a person catches on fire, smother the flames by placing them under the safety shower. ***Only use the fire blanket for smothering small fires, hood fires, warmth, or protection from flames.*** (BC LSM)
- ❖ Use of a fire blanket on a person on fire can cause smoke inhalation as a result of the “chimney effect” and can increase the severity of burns by containing the heat next to the person. (BC LSM)



1.8 How to Evacuate a Burning Building

- ❖ Close the doors and proceed to the nearest exit as outlined in the evacuation plan located in each room.
- ❖ Never use the elevators.
- ❖ Stay low to avoid smoke and toxic gases.
- ❖ If possible, cover your nose and mouth with a damp cloth.
- ❖ Once outside the building, move away from the exits and building. Take a head count of the class.



1.9 What to Do if Trapped in a Burning Building

- ❖ Never open a closed door without feeling it first. Use the back of your hand to prevent burning your palm. If the door is hot, try another exit. If none exists, seal the cracks around the doors and vents with anything available.
- ❖ Call 911, giving them your exact location.
- ❖ If breathing is difficult try to ventilate the room.

1.10 Fire and Explosion Hazards

Flammable Precautions:

- ❖ Keep container closed.
- ❖ Vapors are invisible.
- ❖ Keep away from heat, sparks, flames, and other sources of ignition.

Health Hazards:

- ❖ Skin irritants can cause dryness and cracking.
- ❖ Overexposure to vapors include dizziness, slurred speech, unconsciousness, and rarely death.
- ❖ Target Organs – CNS, liver, kidneys