Fire Prevention

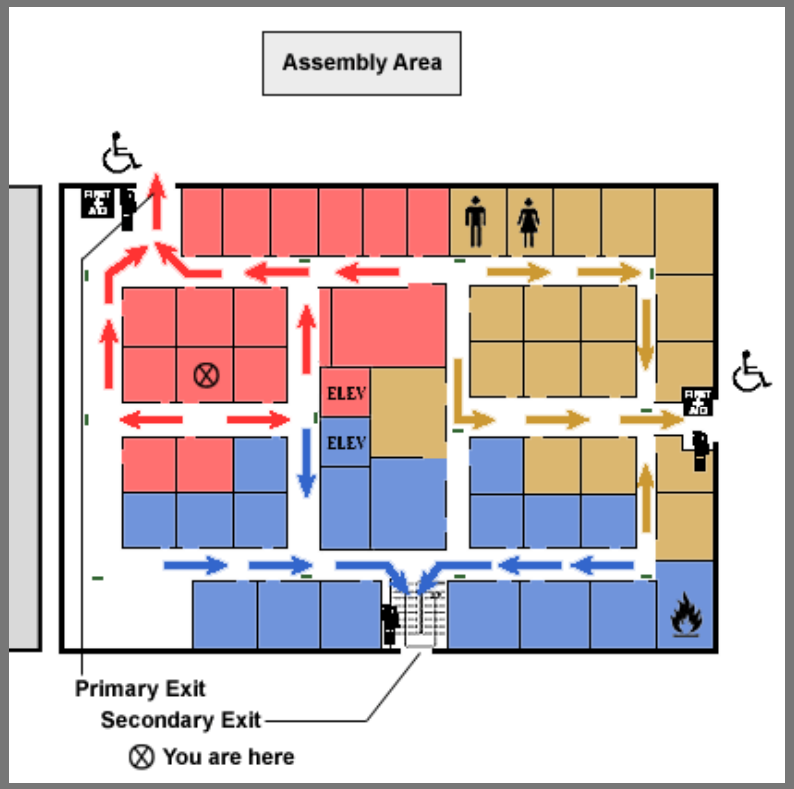
presented by:
Jeff Moody
Disaster Preparedness Coordinator
3rd Street Management

Introduction

- Fires and explosions kill more than 200 and injure more than 5,000 workers each year
- There is a long and tragic history of workplace fires in this country caused by problems with fire exits and extinguishing systems
- OSHA requires employers to provide proper exits, fire fighting equipment, and employee training to prevent fire deaths and injuries in the workplace

Emergency Action Plan

- Describes actions that must be taken to ensure resident & staff safety in emergencies
- Includes floor plans or maps which show emergency escape routes
- Tells employees what actions to take in emergency situations
- Covers reasonably expected emergencies, such as fires, explosions, toxic chemical releases, hurricanes, tornadoes, floods, etc…

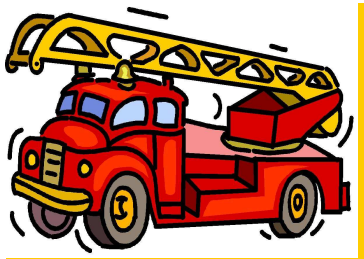


Our Training Objectives

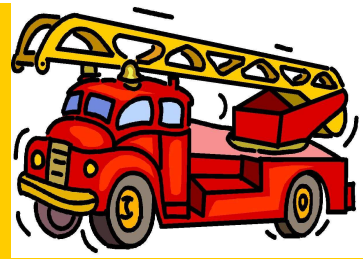
- Fire Prevention Goals
- What is “fire”?
- How fires start
- Leading causes of fire
- The fire TRIANGLE
- Classification of fire
- Emergency Procedures
- Portable Fire Extinguisher
- Evacuation
- Flammable & Combustible Liquids
- Electrical Safety
- Fire Drills
- Summary

Fire Prevention Goals

- Life Safety
  - The primary goal of fire safety efforts is to protect building occupants from injury and to prevent loss of life.
- Property Protection
  - The secondary goal of fire safety is to prevent property damage.
- Protection of Operations
  - By preventing fires and limiting damage we can assure that work operations will continue.



Fire Prevention Plan



The plan must include:

- A list of the major fire hazards, and the handling, storage, and control of hazardous materials
- Job assignments by name of persons responsible for the maintenance of life safety equipment and systems to prevent or control ignitions or fires
- Assign staff members on each shift as “Fire Wardens” to take charge of their areas and direct emergency response procedures
- Training for all employees who have responsibilities in the plan

Be Prepared

In your building, know the location of:

1. **The nearest exit.**
2. **The primary & secondary routes of escape.**
3. **The location of fire extinguishers.**
4. **The location of fire alarm pull stations.**

What is Fire ?

A state, process, or instance of combustion in which fuel or other material is ignited and combined with oxygen, giving off light, heat, and flame

How do fires start?

- Lightening
- Spontaneous combustion
- Chemical reaction
- Electrical

Some causes of Fire

Electricity

Housekeeping

Improper Storage

Combustible Liquids

Equipment

Space Heaters

Construction

Cleaning Supplies

Flammable Liquids

Carelessness

Unattended Cooking

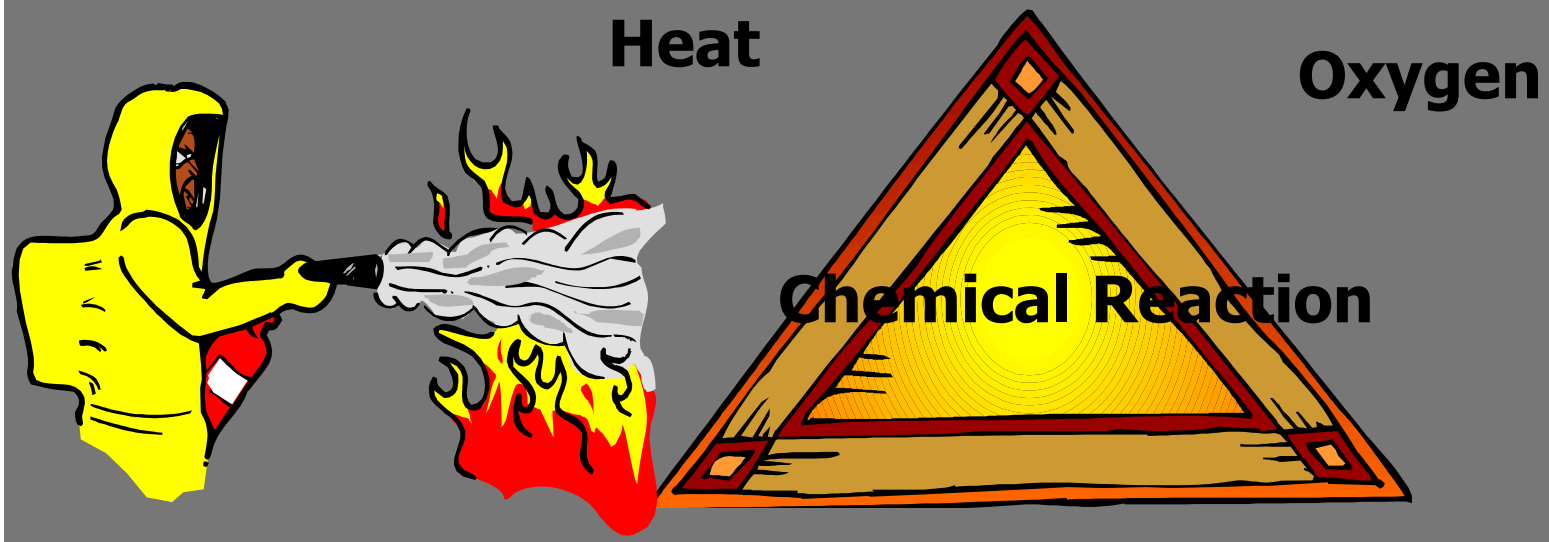
Prevention is the best way to fight a fire!

The Strategy of Preventing a Fire

- A fire must have three things to ignite and maintain combustion:
  - Fuel
  - Heat
  - Oxygen
- The basic strategy of fire prevention is to control or isolate sources of fuel and heat in order to prevent combustion.

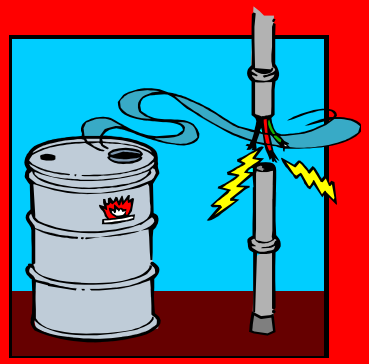
If all three are not present in sufficient quantities a fire will not ignite or a fire will not be able to sustain combustion

Fire Triangle



Classes of fires

- Class A fire = Ordinary combustibles
- Class B fire = Petroleum base
- Class C fire = Electrical
- Class D fire = Combustible metal



Classification of Fire

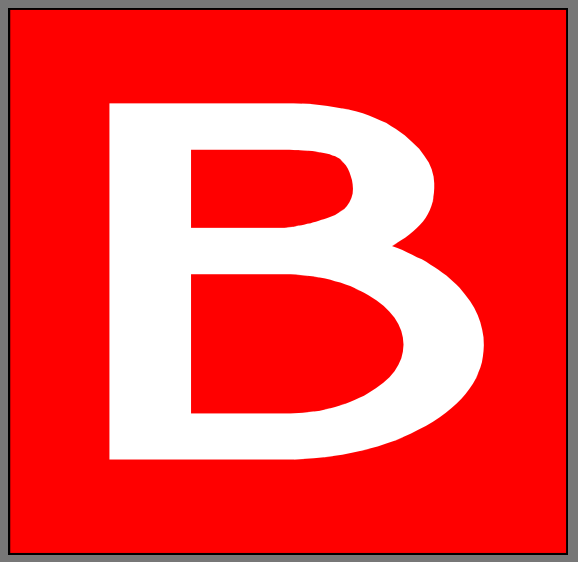
Class A or Ordinary Combustibles

This includes fuels such as wood,paper, plastic, rubber, and cloth.

Green Triangle

Classification of Fire

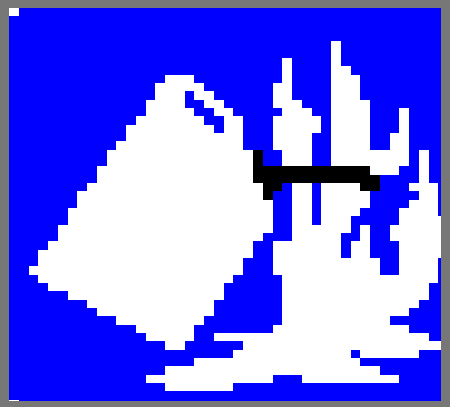
Class B or Flammable and Combustible Liquids and Gases



This includes all hydrocarbon

and alcohol based liquids and

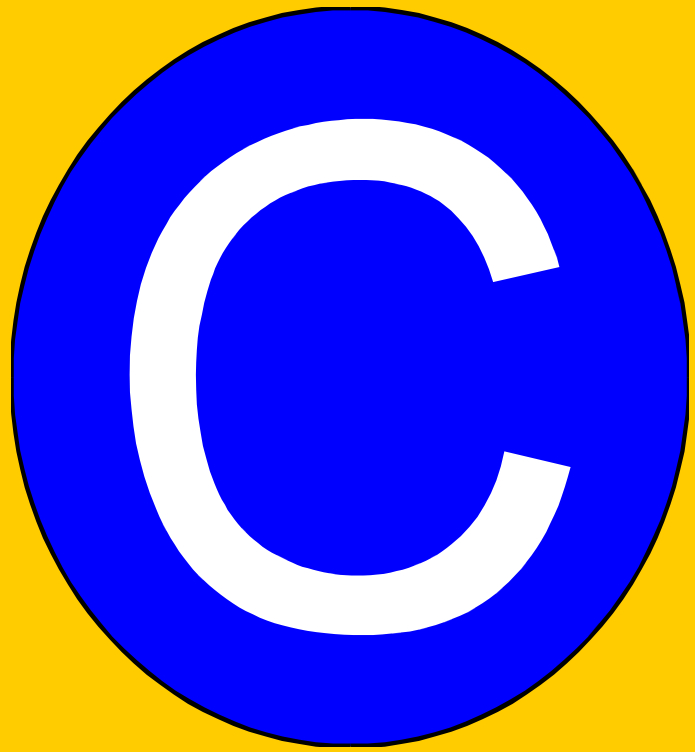
gases that will support combustion.



Red Square

Classification of Fire

Class C or Electrical



Blue Circle

This includes all fires involving energized electrical equipment

Classification of Fire

Class D
or Combustible Metals

Examples of these types of metals are: zirconium, titanium, potassium, and magnesium.

Yellow
Star

Controlling a Fire…R.A.C.E.

- When confronted with a fire, use the acronym **R.A.C.E.** to remember the correct procedures to follow:
  - **R**escue those in immediate danger
  - **A**larm others in the area by activating the nearest fire alarm & make an overhead announcement "Code Red"
  - **C**onfine the fire. Close all doors to rooms in the fire area. Turn off all medical gases and electrical equipment that is NON-ESSENTIAL to care
  - **E**xtinguish the fire if small, or Evacuate

Controlling a Fire

- Pull the nearest fire alarm and call security, or your designated emergency contact (i.e., security)
- Control a fire with a fire extinguisher until the fire department arrives
- Do not endanger your own safety!
- Do not run with burning articles!
- Evacuate patients in danger and reassure patients and visitors that we are responding
- Close all doors in the area of the fire
- Move combustible items away from the fire
- Shut off unnecessary electrical equipment

Fire Alarm System

- The alarm is activated if it senses smoke, water flow in sprinkler pipes, or if a manual pull alarm is activated
- Manual pull alarms are located throughout the facility and are red in color
- Alarms will continue to sound on the fire floor, and the floors above and below the fire, until silenced by security
- Flashing visual alarms are provided for the hearing impaired
- Security monitors fire alarms 24 hours a day, 365 days a year
- Sprinklers are only activated by heat. Each sprinkler is discharged independently.

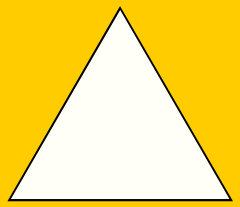
Fire Extinguishers

- In controlling a fire with an extinguisher
  - Ensure that back-up extinguishers are available
  - Do not attempt to put out an overhead fire
- Extinguishers are located so you will not have to travel more than 75 feet, in any direction, to find one
- Access to fire extinguishers should remain unobstructed
- Do not re-hang partially discharged extinguishers
- Missing or discharged extinguishers should immediately be reported to the department responsible for replacing the extinguishers

Types Of Extinguishers

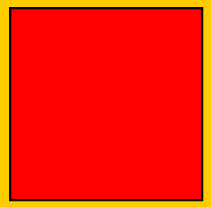
Labeling of Fire Extinguishers

CLASSIFICATIONS:



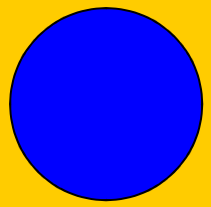
A

TRIANGLE



B

SQUARE



C

CIRCLE

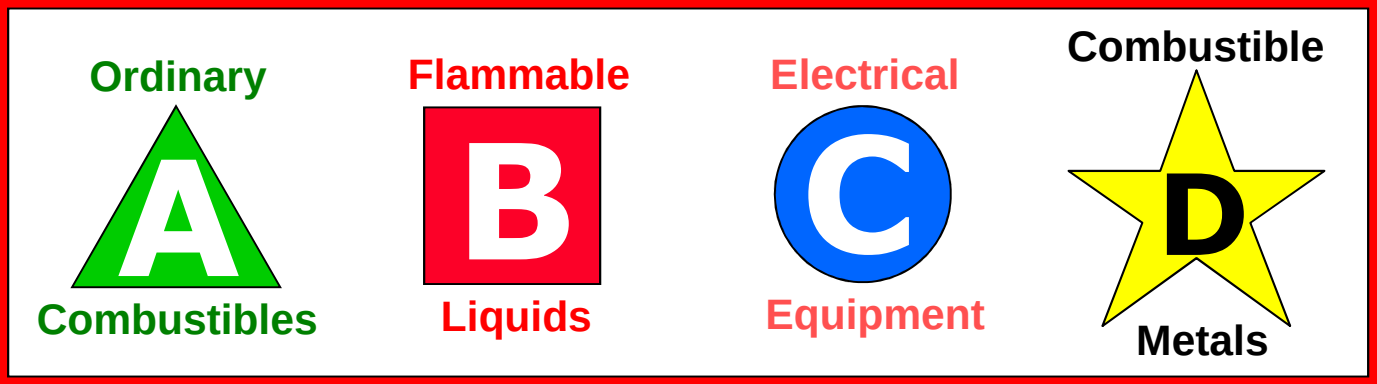
D

STAR

Extinguisher Classification

Letter classification given an extinguisher to designate the class or classes of fire on which it will be effective.

- **Class A** – ordinary combustibles (wood, cloth, paper)
- **Class B** – flammable liquids, gases, greases
- **Class C** – energized electrical equipment
- **Class D** – combustible metals



Maintaining Portable Fire Extinguishers

- Must maintain in a fully charged and operable condition
- Must keep in their designated places at all times except during use
- Must conduct an annual maintenance check
- Must record the annual maintenance date and retain this record for one year after the last entry or the life of the shell, whichever is less

Portable Fire Extinguisher Training and Education

- Where portable fire extinguishers have been provided for employee use in the workplace, employees must be provided with an educational program on the:
  - General principles of fire extinguisher use
  - Hazards of incipient (beginning) stage fire fighting
- Employees designated to use extinguishers must receive instruction and hands-on practice in the operation of equipment

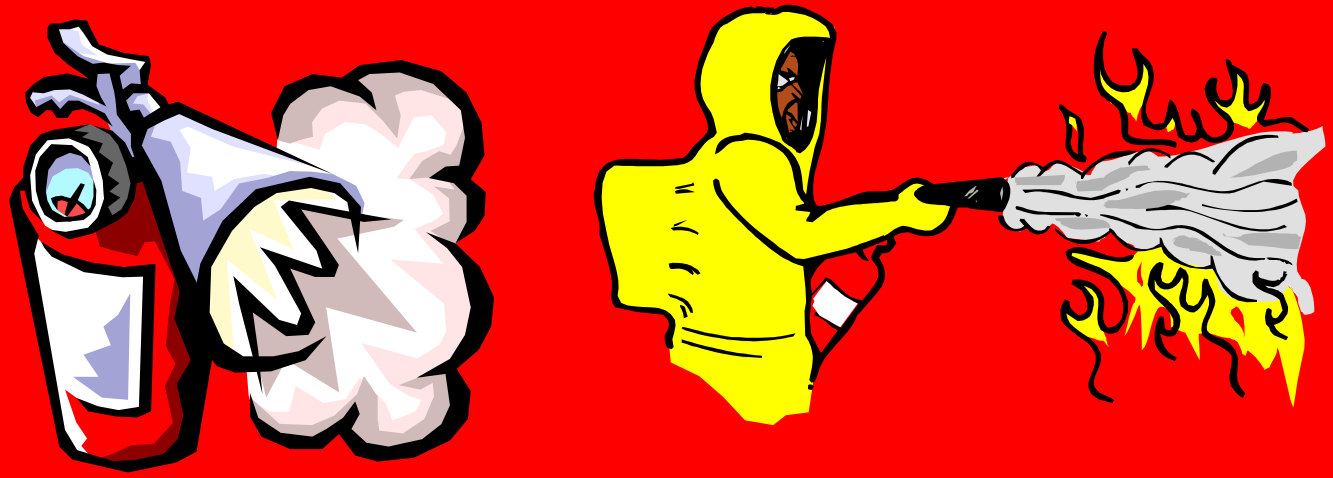
Methods of Application

Fire Extinguishers

- Follow the acronym PASS to use a fire extinguisher:
  - Pull the pin
  - Aim low, at the base of the fire
  - Squeeze the handle. Stand about ten feet from the fire.
  - Sweep the hose from side to side

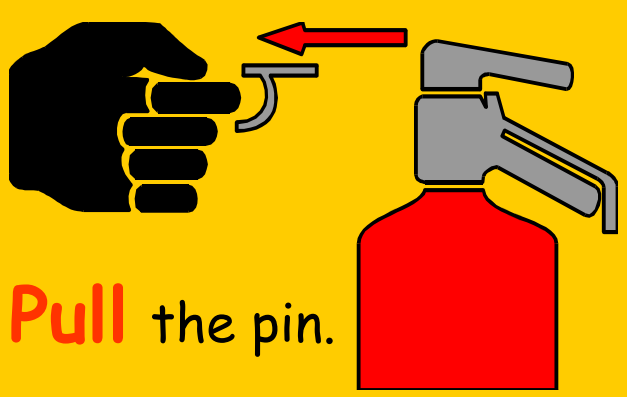
Fire extinguisher operation

- P = PULL PIN
- A = AIM NOZZLE
- S = SQUEEZE HANDLE
- S = SWEEP AT BASE OF FIRE



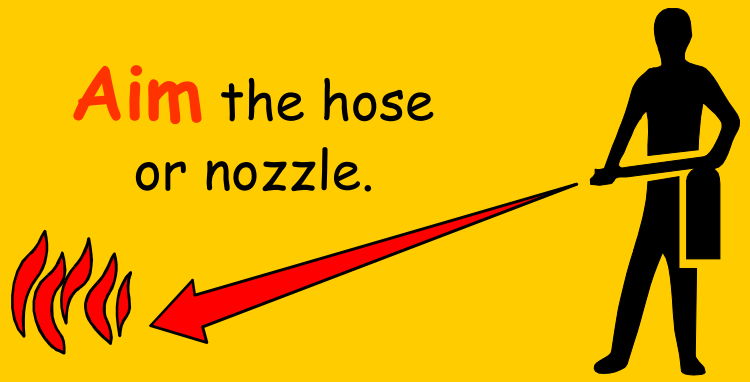
The P.A.S.S. Method

YouTube - Fire Extinguisher PASS

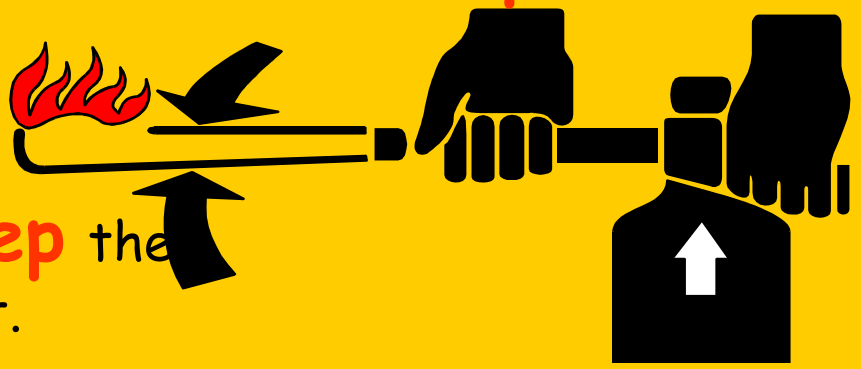


Pull the pin.

Aim the hose or nozzle.



Squeeze the lever.



Sweep the agent.

The Right Decision

Making the “Right” decision of when to use a Portable Fire Extinguisher

- **You know how to use an extinguisher.**
- **You know what is burning.**
- **Fire is not spreading rapidly.**
- **Smoke and heat has not filled the area.**
- **You have a clear path of escape.**
- **Follow your instincts.**

HELP! Someone is on Fire…

- Do not panic or run
- If possible, wrap the person in a blanket
- If a blanket is not available, roll the person over from side to side
- Keep the injured person as calm as possible

If your clothes catch Fire

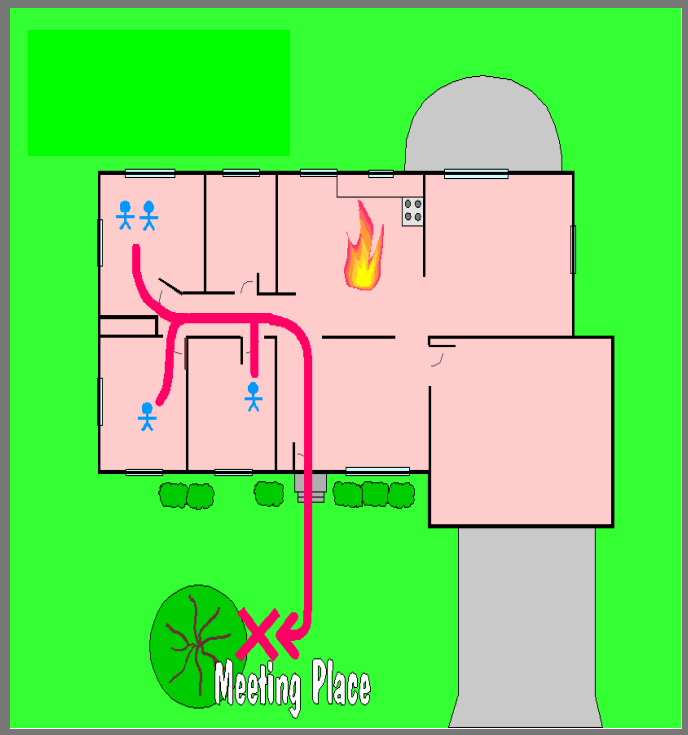
- STOP
- DROP
- ROLL

Sparky® and Sparky the Fire Dog® are registered trademarks of the NFPA.

Learn to Stop, Drop, and Roll over and over if your clothes catch fire. Cool the burn and call for help.

Exit Route

- A continuous and unobstructed path of exit travel from any point within a workplace to a place of safety (including refuge areas)
- Consists of three parts:
  - Exit access
  - Exit
  - Exit discharge



Minimize Evacuation Danger

- Exit routes must be free and unobstructed
- Keep exit routes free of explosive or highly flammable materials
- Arrange exit routes so that employees will not have to travel toward a high hazard area, unless it is effectively shielded
- Emergency safeguards (e.g., sprinkler systems, alarm systems, fire doors, exit lighting) must be in proper working order at all times

Obstructed exit route

Evacuation

- Evacuation will be ordered if:
  - The fire cannot be controlled, or patients, visitors and employees are in immediate danger
- Two types of evacuation:
  - Lateral - Evacuation through smoke/fire barrier doors to a safe area on the same floor
  - Vertical - Evacuation of all occupants on a floor to another safe floor
- Evacuate patients nearest the fire first. If leaving the floor, evacuate patients in the following order:
  - Ambulatory patients
  - Wheelchair patients
  - Bedfast patients

Safety Precautions During Evacuation

- Evacuate beyond smoke/fire barrier doors
- Do not utilize elevators in areas directly threatened by fire
- When traveling through smoke and/or fire, remember to keep low, wrap patients in wet blankets and keep faces covered
- Do not run!
- Do not open a door into an area where a suspected fire might be. To check doors:
  - Use the back of your hand to feel the back of the door…if hot DO NOT open. If not hot, open cautiously by bracing your shoulder and foot against the door and open it slowly
  - If smoke seeps through, close the door
  - If there is no heat or smoke, proceed to evacuate
- Close all doors as you pass
- Do not allow anyone to return to the area

Evacuation cont’d

- Check evacuation routes in advance to ensure they are safe
- If time permits, dress patients to prepare for weather conditions outside
- Move medical charts with patients
- Account for all residents and staff
- Staff members should be assigned to stay with the evacuated groups to prevent panic, prevent re-entry and to keep everyone out of the way of fire fighting operations

Housekeeping

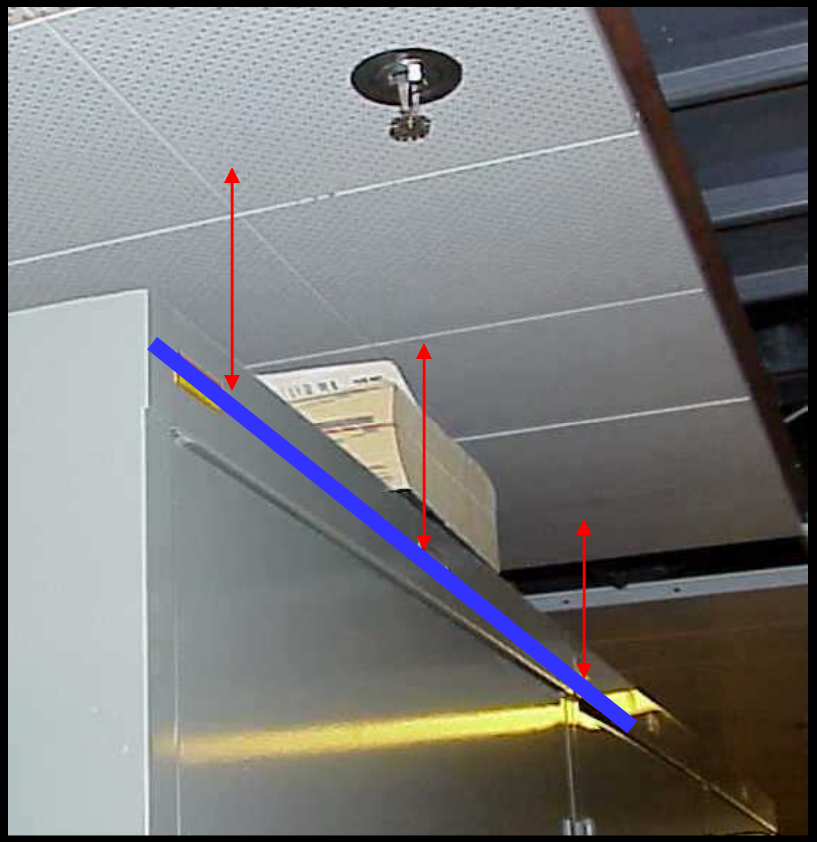
- Good housekeeping habits are an important part of a safe workplace.
- Why is good housekeeping important?
  - To reduce amounts of flammable and combustible materials.
  - To reduce ignition hazards.
  - To ensure safe emergency evacuation of occupants.
  - To allow for quick emergency response.

General Housekeeping Guidelines

- Work areas, aisles, walkways, stairways, and equipment should be kept clear of loose materials, trash, scraps, etc.
- Never block aisles, fire exits, emergency equipment, or alarm pull stations with equipment or materials.
- Avoid build up of combustible trash and waste such as paper, wood, cardboard, etc.
- Keep use and storage of flammables and combustibles to a minimum.
- Clean up all spills such as grease, oil, or water immediately. A delay could result in accidents.

Storage Guidelines

- No storage is allowed in corridors and stairwells. A cluttered hallway could slow down emergency evacuation.
- Storage must not exceed a plane of 18 inches below sprinkler heads or smoke detectors. Storage that breaks this plane may prevent sprinkler heads from fully covering room during a fire.

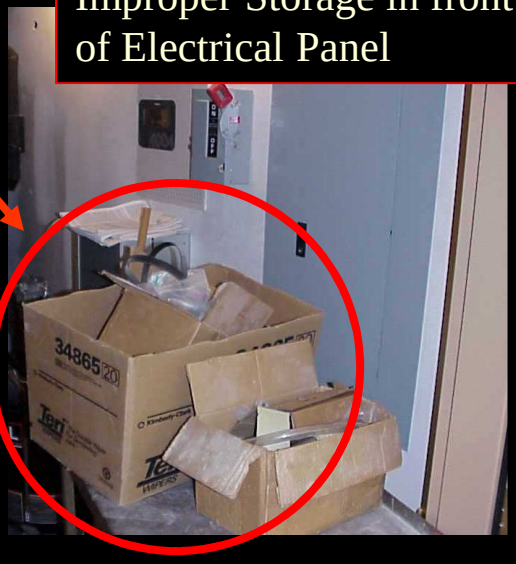


A example of how storage can protrude into 18 inch plane below sprinkler heads.

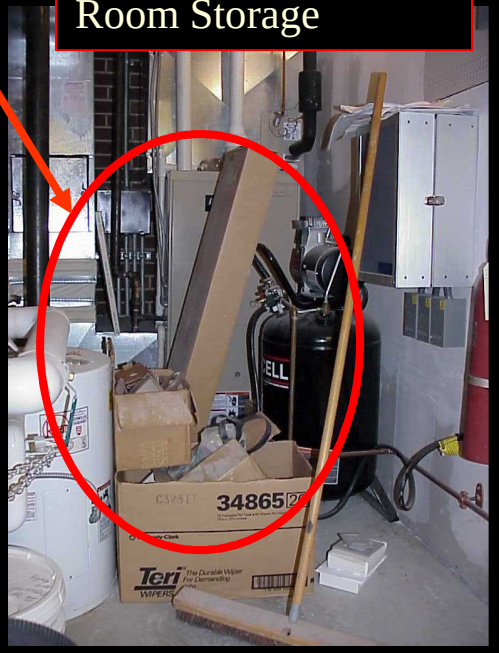
Storage Guidelines

- All storage must be at least 3 ft from electrical panels. In some emergency situations it will be necessary to access these panels quickly.
- Maintain at least a 3ft clearance from heating surfaces, air ducts, heaters, and lighting fixtures.
- Storage of combustible materials in mechanical rooms is prohibited.

Improper Storage in front of Electrical Panel



Improper Mechanical Room Storage



Flammable and Combustible Liquids

- Flammable and combustible liquids are potential fuel sources for fires and are present in almost every workplace.
- It is actually the vapor created by flammable and combustible liquids that ignites and burns.
- It is important to understand what materials in your work area are flammable and combustible so that you may properly store and isolate them from ignition sources.

Flammable and Combustible Liquids cont'd...

- Flammable liquids are considered flammable because their flashpoints are < 100ºF. This means that flammable liquids burn easily at normal working temperatures.
- Combustible liquids have a flashpoint at or above 100ºF. These liquids are less hazardous than flammable liquids but still pose a risk.
- The volatility of flammable and combustible liquids requires special storage and handling requirements.

How do I tell what's flammable?

- NFPA classification system
  - The NFPA diamond is an easy way to determine the safety risks associated with hazardous materials. To determine a materials flammability refer to the red section of the diamond. A number in this section will indicate the flammability rating of the material.
- The following numbering system is used to indicate flammability

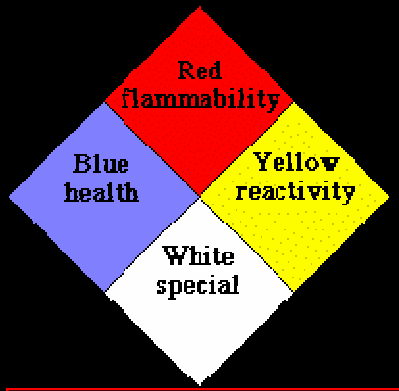
0- will not burn

1- must be preheated to burn

2-ignites when moderately heated

3-ignites at normal temperature

4-extremely flammable



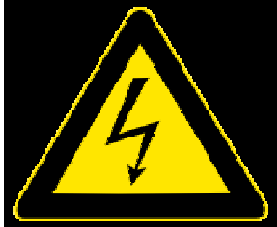
NFPA Diamond

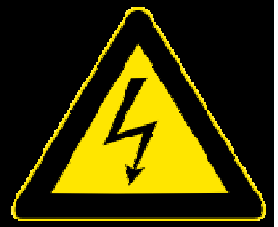
NFPA Classification System Continued...

- Where can I find NFPA diamonds?
  - Product labels
  - Material Safety Data Sheets
- How do I determine the flammability of chemicals that don't use the NFPA classification system?
  - The flashpoint of a chemical may be used to determine its flammability. Flashpoint information may be found on product labels or MSDS sheets.

Storing Flammable and Combustible Liquids

- Flammable liquids must be stored away from ignition sources in cool, well ventilated areas away from incompatible materials
- Limit the amount of flammable and combustible liquids to the minimum amount necessary.
- As a general rule, No more than 10 gallons of flammable materials should be outside of approved flammable liquid storage cabinets or approved storage rooms.
- Room storage limits of flammable and combustible materials depend on various factors such as sprinklers, and storage cabinets.





Fire Safety-Electrical Issues

- Electrical hazards are the cause of numerous workplace fires each year. Faulty electrical equipment or misuse of equipment produces heat and sparks that serve as ignition sources in the presence of flammable and combustible materials.
- Examples of common ignition hazards:
  - overloading circuits
  - use of unapproved electrical devices
  - damaged or worn wiring

Electrical Fire Safety

- Extension cords
  - Extension cords are only approved for temporary use. They may only be used for a period of three days or less. Instead of using extension cords contact FP&M to install permanent wiring.
  - When using extension cords check for defaults such as frays, brittleness, or broken wires.
  - Never place extension cords in high traffic areas where they can be damaged by being stepped on or run over by equipment.

Electrical Fire Safety

- Avoid the following improper and hazardous practices:
  - Never use three prong adapters that allow a three pronged plug to plug into a two prong outlet.
  - Never use any item with a damaged or frayed electrical cord.
  - Space Heaters are not allowed in campus buildings.
  - Never daisy chain or piggy back multi-plug strips and electrical cords (plugging strips and cords into each other).

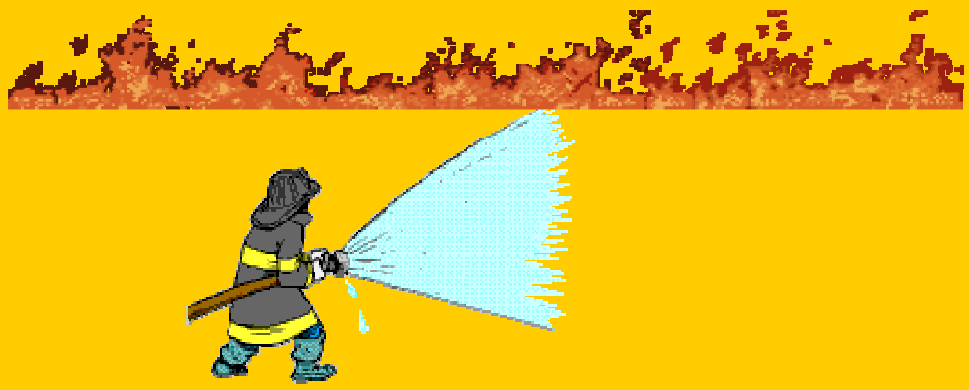
Compartmentalization

- Buildings are designed to prevent fire, heat, and smoke from spreading beyond locations of origination. Building elements such as fire walls, fire dampers, and fire doors, are designed to seal off one location from the next. This system is called compartmentalization.
- Compartmentalization increases the safety of evacuating building occupants because smoke and fire are not able to escape into exit passageways.
- Containment of fire and smoke reduces property damage and prevents small fires from growing into large fires.
- In order for compartmentalization efforts to be effective fire barriers must be maintained.

Fire Drills

- Provide practice and critique of our Fire Training & Response
- Occur on an unannounced basis
- Are required by law and require full participation
  - Monthly Drills
  - Conducted on different shifts

Don’t be a Dead Hero!



You are not expected to be a firefighter!

Do not take unnecessary risks!

Summary

- There must be enough exits in the proper arrangement for quick escape
- Exit routes must be marked, lighted, free of obstructions, and locks must not be used to impede or prevent escape
- An emergency action plan and a fire prevention plan must be in place
- Fire extinguisher classes and numerical ratings help a user understand its capabilities
- Fire extinguishers must be inspected, maintained and employees must be trained in how to use them

??? Questions ???