OSHA Topic Review OSHA 29 CFR 1910.38-39, Exit Routes, Emergency Action Plans, Fire Prevention Plans, and Fire Protection

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Introduction

Fires and explosions, as well as other workplace incidents, may require emergency actions and evacuations to protect employees.

Introduction

Lesson objectives:

1. Recognize benefits of an Emergency Action Plan.
2. Identify elements of Fire Protection Plan.
3. Identify conditions under which evacuation actions may be necessary in an emergency situation.
4. Identify conditions under which shelter-in-place may be necessary in an emergency situation.

Introduction

5. Identify characteristics of an effective emergency escape route.
6. Recognize the five types of fire extinguishers, including the types of fires they can extinguish.
7. Review requirements for proper maintenance of portable fire extinguishers.

Emergency Action Plans

Benefits of an EAP:

- Written document that facilitates and organizes employer and employee actions during workplace emergencies
- Fewer and less severe injuries
- Less structural damage
- Reduce confusion

Emergency Action Plans

Purpose of an EAP:

- Describes actions to be taken to ensure employee safety during an emergency
- Uses floor plans/maps to show emergency escape routes
- Tells employees what actions to take
- Covers reasonably expected emergencies

Emergency Action Plans

Required elements of plan:

- Means of reporting
- Evacuation procedures and emergency escape routes
- Procedures for critical operations
- Accounting of employees
- Rescue and medical duties
- Contact persons

Source of graphics: OSHA

Emergency Action Plans

- Training employees on the EAP
  - Review plan with each employee
    - Initial development of plan
    - Initial assignment of employee to job
    - Changes to plan or employee actions/responsibilities
  - Annual retraining with drills to practice evacuation and gathering in assembly area
  - Educate/train
    - Types of emergencies
    - Course of actions
    - Functions and elements of EAP
    - Special hazards
    - Fire hazards and fire prevention plan

Source: OSHA

Emergency Action Plans

- General training
  - Roles and responsibilities
  - Threats, hazards, protective actions
  - Notification, warning, communications
  - Locating family members
  - Location/use of emergency equipment
  - Procedures
    - Emergency response
    - Evacuation and shelter-in-place
    - Assembly and accounting of employees
    - Emergency shut-down

Source of graphics: OSHA

Emergency Action Plans

Examples of procedures:

- Methods of reporting an emergency
- Instructions for exit
- Instructions for limited mobility

Source of graphics: OSHA

Fire Prevention Plan

FPP requirements:

- Must be
  - In writing
  - Kept in the workplace
  - Available to employees for review

Source: OSHA

- Employer must
  - Inform employees of fire hazards when initially assigned to a job
  - Review with each employee applicable FPP parts

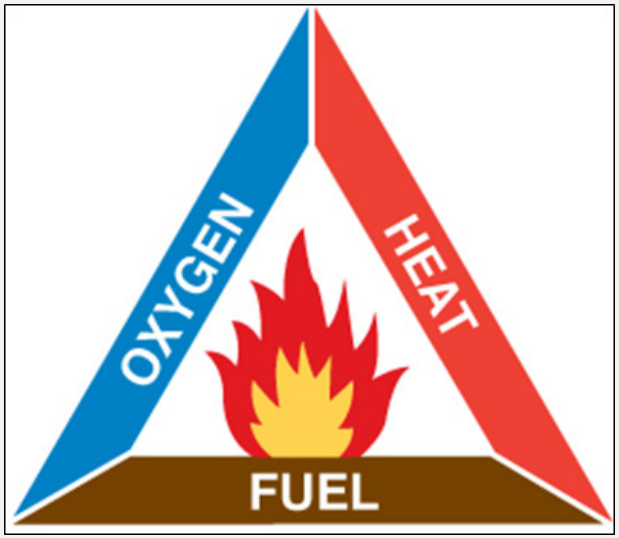
Fire Prevention Plan

- Included in FPP
  - Lists of all major fire hazards, proper handling and storage of hazardous materials, ignition sources/controls, and fire protection equipment
  - Procedures to control flammable/combustible wastes
  - Procedures for maintenance of safeguards on heat-producing equipment
  - Name/job titles of employees with responsibilities for maintenance of equipment and control of hazards

Fire Prevention Plan

Preventing fire hazards:

- Understanding fires
  - Rapid chemical reaction between oxygen and a combustible material
  - Results in release of heat, light, flames, and smoke
  - Requires four elements:
    - Oxygen
    - Ignition source (heat)
    - Fuel
    - Chemical reaction



Source of graphics: OSHA

Fire Prevention Plan

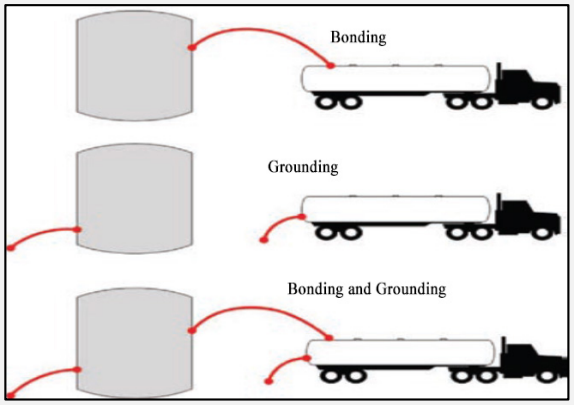
- Ignition sources
  - Open flames
  - Smoking
  - Static electricity
  - Hotwork
  - Hot surfaces
  - Electrical and mechanical sparks
  - Lightning

Source: CDC

Source of graphics: OSHA

Fire Prevention Plan

- Tasks that require fire protection and examples of hazards
  - Hotwork – 30-minute fire watch
  - Dispensing flammables and combustibles: gasoline, diesel, or natural gas
  - Flammable wastes: solvent waste, oily rags, and flammable liquids



Source of graphics: OSHA

Fire Prevention Plan

- Handling of flammable hazards
  - Only use approved metal safety containers or original manufacturer's containers for storage
  - Practice good housekeeping
  - Keep containers closed when not in use
  - Store away from exits or passageways
  - Keep away from ignition sources

Source of graphics: OSHA

Fire Prevention Plan

- Fire protection equipment
  - PPE
  - Fire Suppression
    - Portable fire extinguishers
    - Fixed systems

Source of graphics: OSHA

Conditions Requiring Evacuation

Workplace evacuation may be required for:

- **Man-made emergencies**
  - Fires
  - Explosions
  - Toxic material releases
  - Radiological/biological incidents
  - Civil disturbances
  - Workplace violence
- **Natural emergencies**
  - Floods
  - Earthquakes
  - Hurricanes
  - Tornadoes
  - Wildfires
  - Winter weather

Conditions Requiring Evacuation

Factors affecting response to emergencies:

- Type/extent of emergency
- Location of emergency
- Type of building in which workplace is located
- Shutting down critical operations

Source of graphics: OSHA

Conditions Requiring Evacuation

Fire emergencies:

Fight or Flee?

- Options for evacuation
  1. Total evacuation
  2. Designated employees authorized to fight fire; all others evacuate
  3. All employees authorized to fight fire
  4. Extinguishers provided but not intended for employee use

Source of graphics: OSHA

Conditions Requiring Evacuation

Fire emergencies:
Fight or Flee?

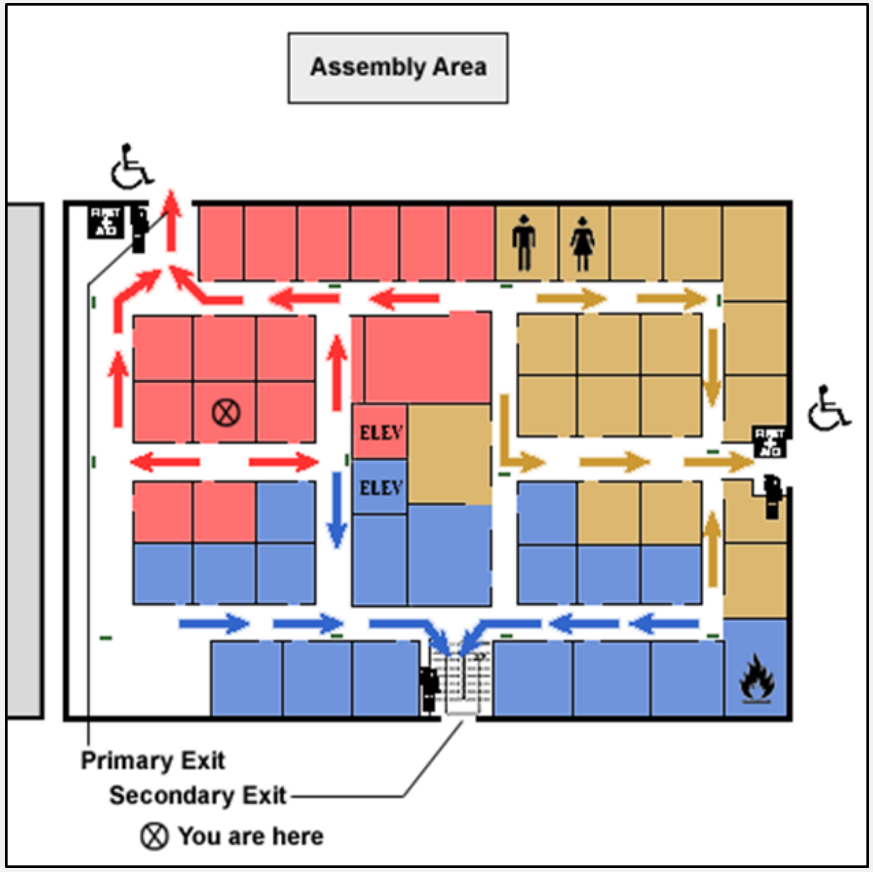
- Performing a risk assessment
  - Is the fire too big?
  - Is the air safe to breathe?
  - Is the environment too hot or smoky?
  - Is there a safe evacuation path?

Source: OSHA

Conditions Requiring Evacuation

Evacuation maps show:

- Exits: to, thru, and away
- At least two ways out
  - Primary exit
  - Secondary exit
- Assembly area
- Location on the map
- Additional information – Location of fire extinguishers



Source: OSHA

Conditions Requiring Evacuation

Evacuation actions:

- Alerting employees to **evacuate**
  - Alarm
  - Enunciator panel/speaker
- Accounting for who has **exited**
  - How is that accomplished
- Keeping employees **informed**
  - All clear, re-enter, or remain at assembly point
  - Clear to leave workplace

Source of graphics: OSHA

Conditions Requiring Shelter-in-Place

Incidents that may require shelter-in-place:

- Release of chemical, biological, or radiological contaminants
- Severe weather – tornadoes
- Other situations occurring outside the workplace

Source: CDC

Source: FEMA Region VI

Conditions Requiring Shelter-in-Place

Shelter-in-place:

- Means taking refuge in interior room(s) with no/few windows
- Local authorities often issue shelter-in-place advice via TV or radio
- Procedures specific to worksite

Source of graphics: OSHA

Conditions Requiring Shelter-in-Place

Planning shelter-in-place actions:

- Alerting employees – ***shelter-in-place***
- Accounting for who is in ***refuge***
- Keeping employees informed

Source of graphics: OSHA

Emergency Escape Routes

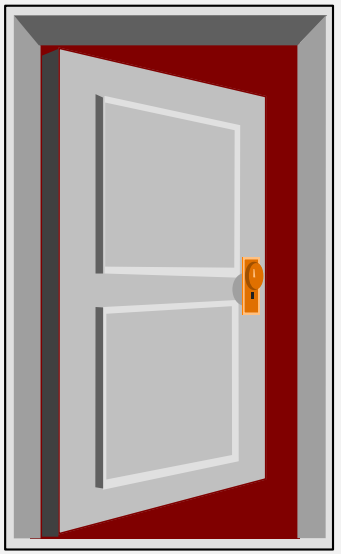
Exit routes:

- Continuous and unobstructed path of exit travel from any place in workplace to safety
- Exit access, exit, exit discharge
- Should be:
  - Clearly marked
  - Well-lit
  - Appropriate width
  - Unobstructed/clear

Source: TEEX

Emergency Escape Routes

- Basic exit route requirements:
  - Permanent
  - Separated by fire-resistant materials
  - Limited openings
  - Adequate number of exit routes
  - Discharge leading directly outside or to a place with access to outside
  - Exit door unlocked from inside and side-hinged
  - Adequate capacity
  - Minimum height and width



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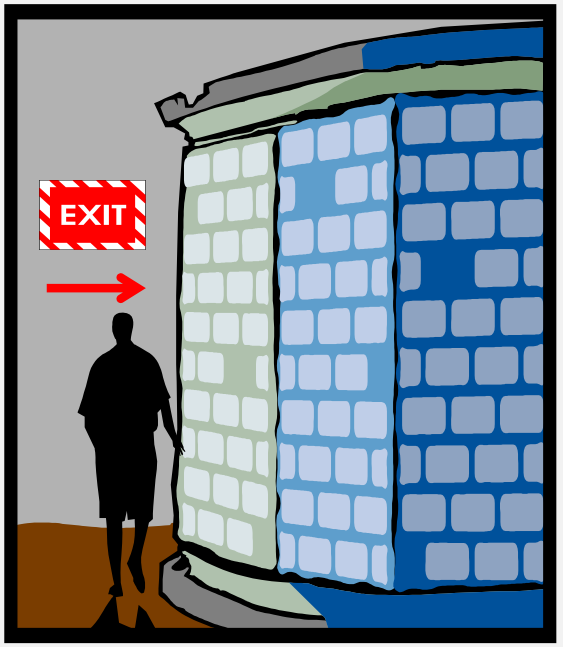
Emergency Escape Routes

- Clearly communicate 3 elements of escape route
  - Exit access pathway
  - Nearest exits from all points of building
  - Pathway away from building structure



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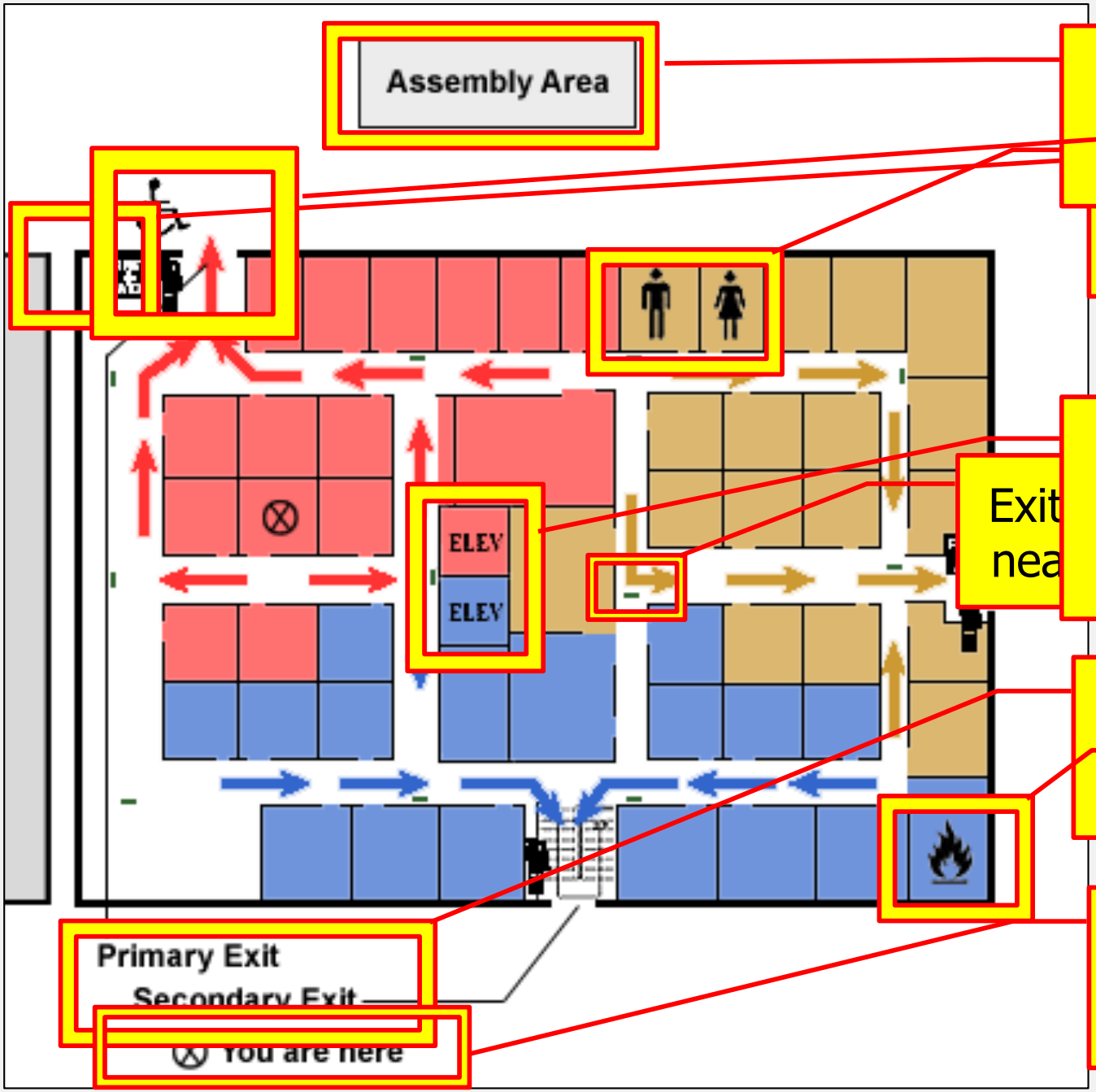


Indicate exits with wheelchair access

No use of elevators to reach an emergency exit

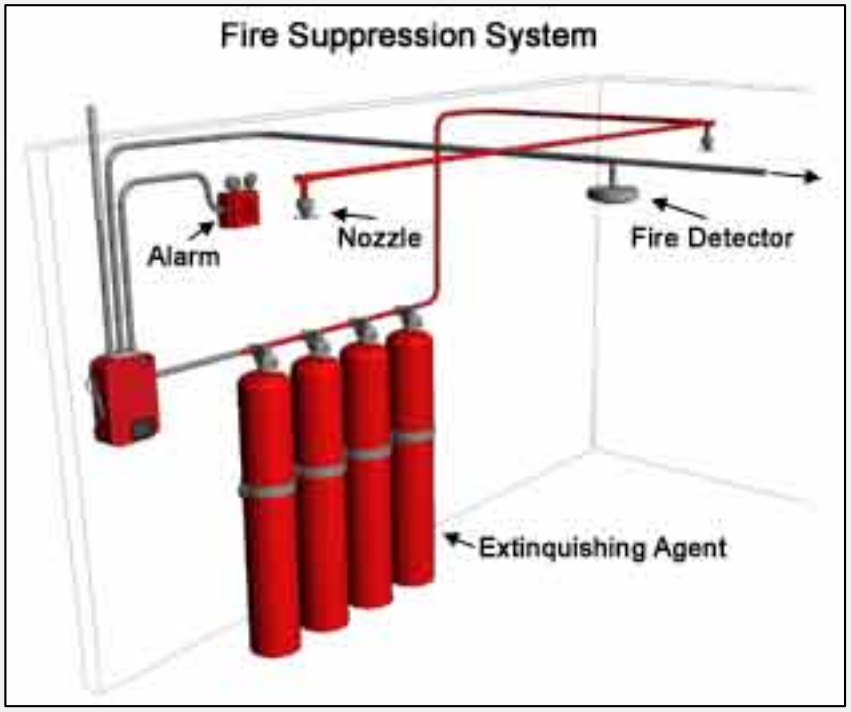
Exit away from rooms with hazardous

Indicate the employee's current location

Extinguishing Fires

Methods of fire protection:

- Fixed extinguishing systems
- Fire brigades
- Fire extinguishers



Source of graphics: OSHA

Extinguishing Fires

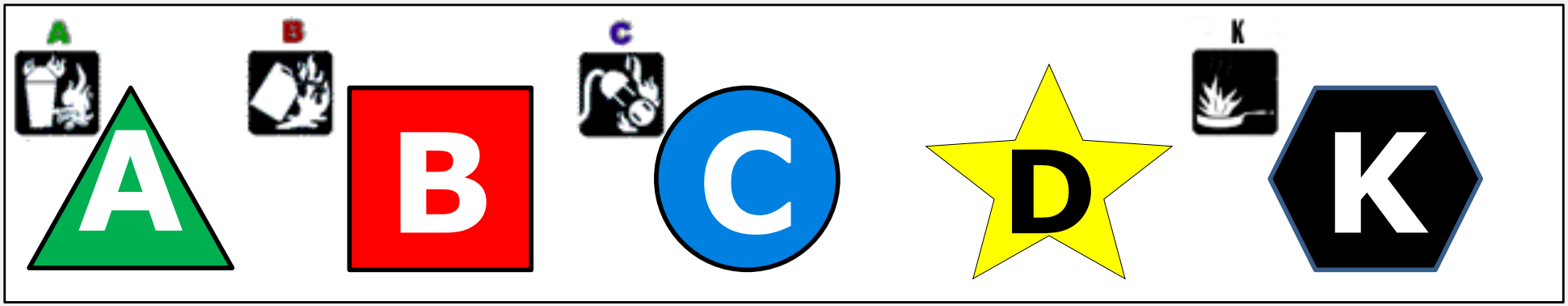
- Portable fire extinguisher training and education
  - Required for employees authorized to use fire extinguishers
  - General principles of fire extinguisher use
  - Hazards of incipient stage fire fighting
  - Operation of equipment (instruction and hands-on practice)
  - Required upon initial employment/assignment and at least annually thereafter

Source: OSHA

Extinguishing Fires

Classes of fires:

- Class A – ordinary combustibles
- Class B – flammable liquids and gases
- Class C – energized electrical equipment
- Class D – combustible metals
- Class K – cooking oils and greases



Source: OTIEC

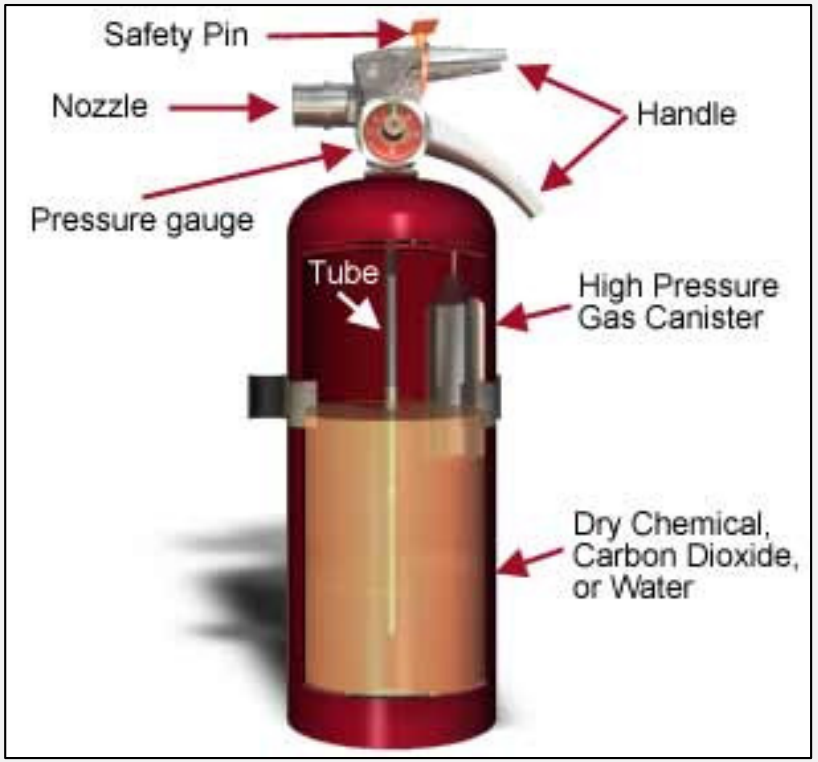
Extinguishing Fires

- How fire extinguishers work
  - Remove heat
  - Displace/remove oxygen
  - Stop chemical reaction

Source: OSHA

Extinguishing Fires

- Parts of a fire extinguisher and labels



Source of graphics: OSHA

Extinguishing Fires

Types of extinguishers:

- Water
- Carbon Dioxide
- Dry Chemical

Source: OSHA

Extinguishing Fires

- Water or air-pressurized water (APW) extinguishers
  - Designed for **Class A fires only**
  - Large silver container, 2 to 3 ft. tall, weighing about 25 lbs. when full
  - Filled 2/3 with ordinary water, then pressurized with air
  - Detergents may be added
  - Cool the surface to remove the heat
  - Never use to extinguish flammable liquid fires or electrical fires

Source of graphics: OSHA

Extinguishing Fires

- Carbon Dioxide (CO_2) extinguishers
  - Designed for **Class B and Class C fires only**
  - Red cylinders, ranging from 5 to 100 lbs. or larger, with a hard horn and no pressure gauge
  - Filled with Carbon Dioxide (CO_2), under extreme pressure
  - Displace oxygen; dry ice pieces also have cooling effect
  - Never use in confined spaces without respiratory protection

Source of graphics: OSHA

Extinguishing Fires

- Dry Chemical extinguishers (Multi-purpose)
  - May be used on **Class A, Class B, and/or Class C fires** (check label)
  - Red cylinders, ranging in size from 5 to 20 lbs.
  - Fire-retardant powder is the extinguishing agent and is propelled by a compressed, non-flammable gas
  - Separates fuel from oxygen; powder also interrupts chemical reaction

Source of graphics: OSHA

Extinguishing Fires

- Class K – dry and wet chemical extinguishers
  - Designed for **kitchen fires**
  - Only intended to be used after activation of built-in hood suppression system
  - Filled with electrically conductive extinguishing agents; use only after electrical power to appliance has been shut off
  - Potassium bicarbonate may be used in dry types; wet chemical extinguishers spray a fine mist

Source of graphics: OSHA

Extinguishing Fires

Using a fire extinguisher:

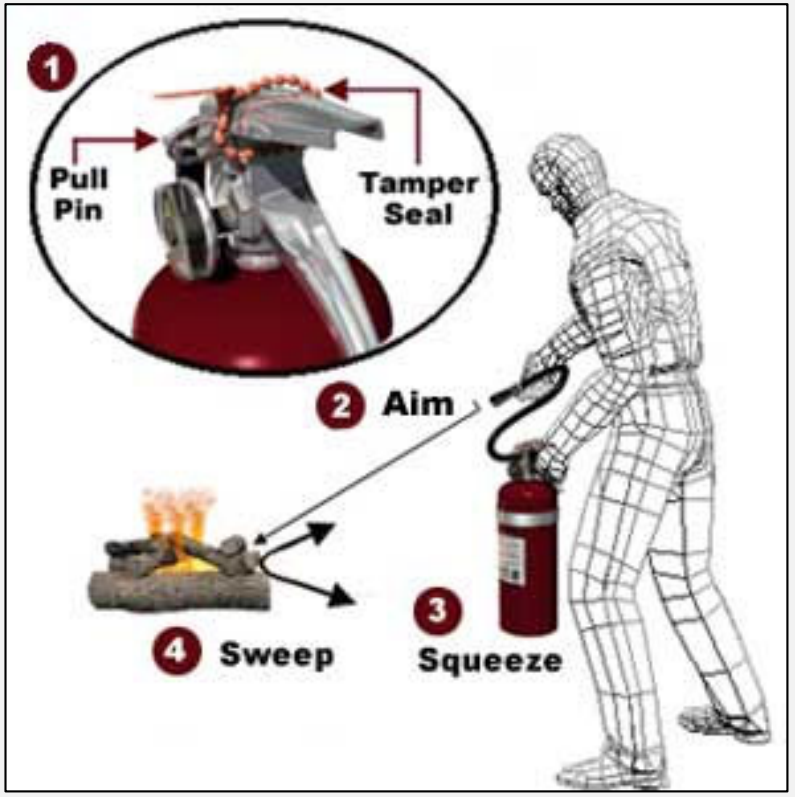
- Steps to follow
  1. Sound alarm; call fire department
  2. Identify safe evacuation path
  3. Select appropriate fire extinguisher
  4. Discharge extinguisher using P.A.S.S. technique
  5. Back away once extinguished
  6. Evacuate immediately if necessary
     - Extinguisher empty and fire is not out
     - Fire progresses beyond incipient stage

Extinguishing Fires

- P.A.S.S. technique
  - **Pull** the pin
  - **Aim** at base of fire
  - **Squeeze** handle
  - **Sweep** side-to-side at base of fire until fire appears out

Watch area for re-ignition and repeat steps 2 – 4;

When in doubt,
EVACUATE IMMEDIATELY!



Source: OSHA

Maintenance of Extinguisher

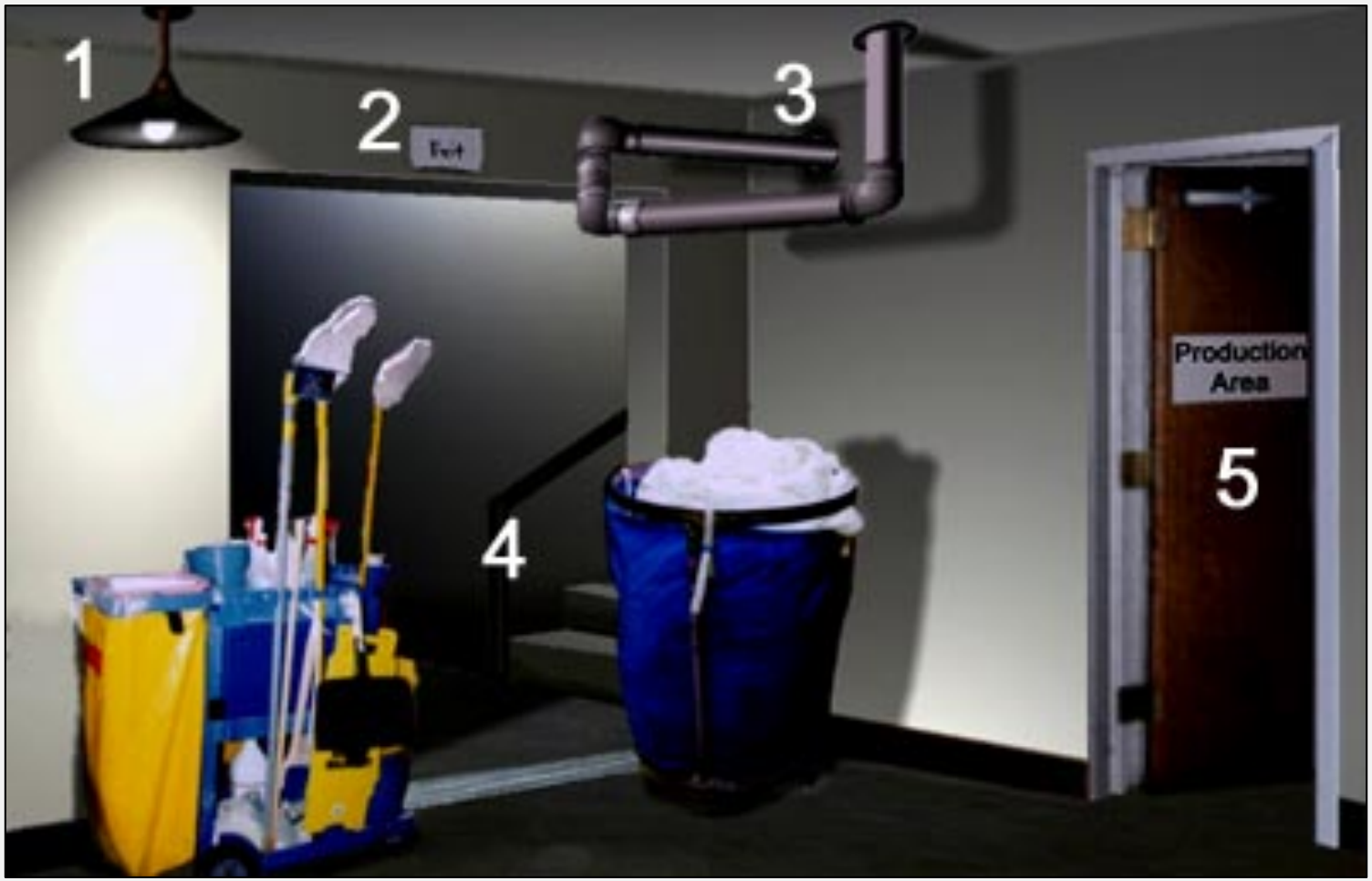
Elements of inspection:

- Inspect bottle, handle, hose, and gauge for proper working order
- Inspection tag
  - Month and Year put in service current (annual)
  - Monthly visual inspections completed (monthly)
  - Extinguisher product still free-flowing inside bottle (turn upside down and/or shake)

What's Wrong?

Source: OSHA

What's Wrong?



Source: OSHA

Additional Resources

- www.mass.gov contains a number sample policies and procedure that can be adopted for use under the Sample Safety and health programs section of the website
- Included on the site is a sample – "Emergency Action Plan"

Questions?

Knowledge Check

1. Which of the following statements is TRUE regarding Emergency Action Plans (EAPs)?
   a. EAPs need to be written down only if requested by employees.
   b. EAPs facilitate and organize actions taken during an emergency.
   c. EAPs have no effect on the number or severity of injuries during and emergency.
   d. EAPs increase confusion due to the number of documents required.

Answer: b. EAPs facilitate and organize actions taken during an emergency

Knowledge Check

2. Fire Prevention Plan (FPP) requirements include all of the following, except ___.
   a. it must be written document that is kept in the workplace
   b. it must be made available to employees for review
   c. the employer must review with each employee the parts of the FPP necessary for self-protection
   d. FPPs can be communicated orally if there are more than 10 employees

Answer: d. FPPs can be communicated orally if there are more than 10 employees

Knowledge Check

3. Which of the following elements are required in order for a fire to occur?
   a. Sufficient oxygen, fuel, ignition source, and chemical reaction
   b. Sufficient fuel, carbon dioxide, heat, and chemical reaction
   c. Combustible materials, spark, heat, and mechanical reaction
   d. Smoke, heat, flames, and light reaction

Answer: a. Sufficient oxygen, fuel, ignition source, and chemical reaction

Knowledge Check

4. Only those employees who have received training on the use of a fire extinguisher can be authorized to use a fire extinguisher during a workplace fire.
   a. True
   b. False

Answer: a. True

Knowledge Check

5. Which of the following statements represents an element of a good emergency evacuation floor plan?
   a. Designates one exit pathway so as not to confuse evacuees
   b. Indicates locations of elevators used to reach emergency exit
   c. Directs exits away from rooms with hazardous materials
   d. Indicates restrooms and windows as potential exits

Answer: c. Directs exits away from rooms with hazardous materials

Knowledge Check

6. Trash fires involving paper and wood products are __ fires.
   a. Class A
   b. Class B
   c. Class C
   d. Class D

Answer: a. Class A

Knowledge Check

7. Which fire extinguisher is appropriate for use on a fire involving gasoline in a confined space when no respiratory protection is available?
   a. Water (APW) extinguisher
   b. Carbon dioxide extinguisher
   c. Dry chemical extinguisher
   d. Class K dry-type extinguisher

Answer: c. Dry chemical extinguisher

Knowledge Check

8. The P.A.S.S. technique for using a fire extinguisher means ___.
   a. Position, aim, sweep, slowly
   b. Pull, aim, squeeze, sweep
   c. Point, away, side-to-side
   d. Pin, approach, start, stop

Answer: b. Pull, aim, squeeze, sweep

Knowledge Check

9. At minimum, how often must maintenance checks be performed on portable fire extinguishers?
   a. Once a month
   b. Once a year
   c. Once every two years
   d. Once every five years

Answer: b. once a year