Fire Extinguishers

OSHA 502 Training Presentation

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Outline – Fire Extinguishers

- Statistics
- Fight or Flee?
- Extinguisher Basics
- Fire Extinguisher Use
- Video of Fire Extinguisher being used
- Extinguisher Placement and Spacing
- Inspection & Testing
- Q & A – Quiz

The Employer is responsible for the development of a fire protection program, …and shall provide the firefighting equipment.

OSHA 1926.150 (Subpart F)

Fire Safety Statistics

- According to the Bureau of Labor Statistics' Census of Fatal Occupational Injuries Charts, for an 11 year period, fires and explosions accounted for 3% of construction fatalities per year.
- Remember Stats for our OSHA Focus Four for construction - 2018: Falls 33%; Electrocutions 11%; Struck By 8%; Caught In or Between 5%
- Estimated 4,800 construction site fires annually causing $35 million in property damage

Fight or Flee?

- A critical decision with fire safety plan – whether or not employees should fight a fire or simply evacuate.
- Costs associated with maintaining equipment and training employees – when they are hired and annually.
- So, Employer must make a decision and a plan.

Question:

- When should we never try to fight the fire?

If the Fire Too Big, Air Unsafe, Environment Too Hot or Smokey, Unsafe Evacuation Path (means of egress)

Fight or Flee?

Extinguisher Basics

- For fire to exist, the following four elements must be present at the same time:

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, and
4. The chemical reaction that is fire.

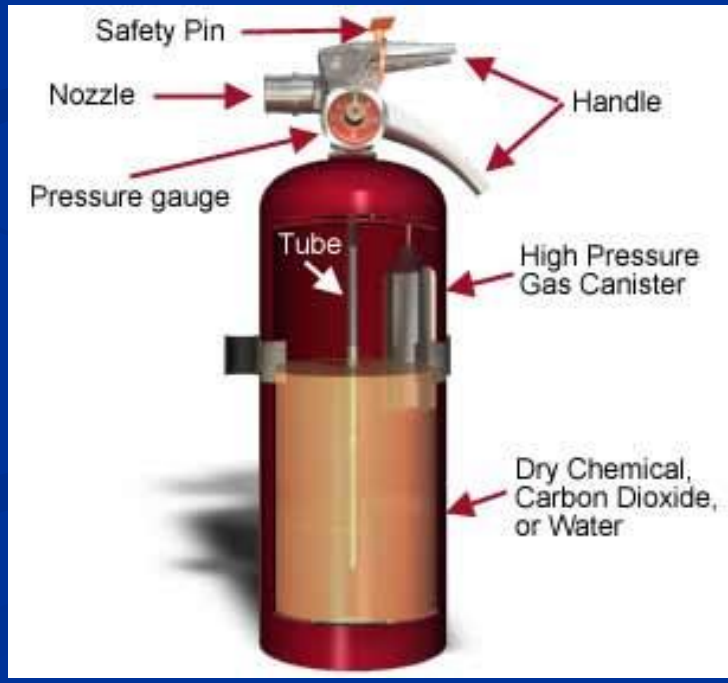
Extinguisher Basics

- **How a fire extinguisher works** :

  Portable fire extinguishers apply an extinguishing agent that will either –

- cool burning fuel,
- displace or remove oxygen, or
- stop the chemical reaction so a fire cannot continue to burn.

Parts of the Extinguisher:



Extinguisher Basics

- Types of Fires
  - Class A - Ordinary materials such as paper, wood, cloth
  - Class B - Flammable liquids or Combustible liquids such as gasoline, paint, thinners, propane, kerosene
  - Class C - Electrical equipment fires, appliances, switches, panels
  - Class D - Certain metals such as magnesium, sodium, that could explode!
  - Class K - Kitchen - Fires involving combustible cooking fluids such as oils and fats.

    (For Commercial Kitchens)

Extinguisher Basics

- **1-A:10-BC**

  The letters (A, B, C, etc.) represent the type(s) of fire for which the extinguisher has been approved.

- The number in front of the A rating = how much water the extinguisher is equal to.

- It represents 1.25 gallons of water for every unit of one.

  For example, a 4-A rated extinguisher would be equal to 5 gallons of water (4 x 1.25) .

Testing Lab ->

on label

Extinguisher Basics

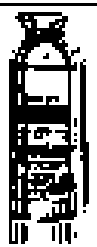
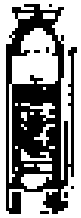
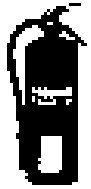
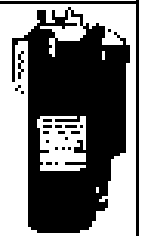
- **1-A:10-BC**

- The number in front of the B rating represents the area in square feet of a class B fire that a non-expert user should be able to extinguish.

- Using the above example, a non-expert user should be able to put out a flammable liquid fire that is as large as 10 square feet.

That's not much area to cover!!

Table F-1 FIRE EXTINGUISHERS DATA

	WATER TYPE				FOAM	CARBON DIOXIDE	DRY CHEMICAL			
							SODIUM OR POTASSIUM BICARBONATE		MULIT-PURPOSE ABC	
	 STORED PRESSURE	 CARTRIDGE OPERATED	 WATER PUMP TANK	 SODA ACID	 FOAM	 CO2	 CARTRIDGE OPERATED	 STORED PRESSURE	 STORED PRESSURE	 CARTRIDGE OPERATED
CLASS A FIRES WOOD, PAPER, TRASH HAVING GLOWING EMBERS	YES	YES	YES	YES	YES	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	YES	YES
CLASS B FIRES FLAMMABLE LIQUIDS, GASOLINE, OIL, PAINTS, GREASE, ETC.	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES
CLASS C FIRES ELECTRICAL EQUIPMENT	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES
CLASS D FIRES COMBUSTIBLE METALS	SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING									
METHOD OF OPERATION	PULL PIN-SQUEEZE HANDLE	TURN UPSIDE DOWN AND BUMP	PUMP HANDLE	TURN UPSIDE DOWN	TURN UPSIDE DOWN	PULL PIN-SQUEEZE LEVER	RUPTURE CARTRIDGE-SQUEEZE LEVER	PULL PIN-SQUEEZE HANDLE	PULL PIN-SQUEEZE HANDLE	RUPTURE CARTRIDGE-SQUEEZE LEVER
RANGE	30' - 40	30' - 40	30' - 40	30' - 40	30' - 40	3' - 8'	5' - 20'	5' - 20'	5' - 20'	5' - 20'
MAINTENANCE	CHECK AIR PRESSURE GAUGE MONTHLY	WEIGH GAS CARTRIDGE ADD WTER IF REQUIRED ANNUALLY	DISCHARGE AND FILL WITH WATER ANNUALLY	DISCHARGE ANNUALLY -RECHARGE	DISCHARGE ANNUALLY -RECHARGE	WEIGH SEMI-ANNUALLY	WEIGH GAS CARTRIDGE-CHECK CONDITION OF DRY CHEMICAL ANNUALLY	CHECK GAS PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	CHECK GAS PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	WEIGH GAS CARTRIDGE-CHECK CONDITION OF DRY CHEMICAL ANNUALLY

Fire Extinguisher Use

- What's the First thing to do?

1. Sound the fire alarm and call the fire department (911).
2. Identify a safe evacuation path before approaching the fire. Do not allow the fire, heat, or smoke to come between you and your evacuation path.
3. Select the appropriate type of fire extinguisher.
4. Then…

Fire Extinguisher Use

- Using a portable fire extinguisher
  - **P** - Pull the pin
  - **A** - Aim nozzle at base of flames
  - **S** - Squeeze the trigger
  - **S** - Sweep the extinguisher from side to side, covering the area of the fire with the extinguishing agent

Fire Extinguisher Use

- VIDEO:

CO2 - How to use a fire extinguisher training

http://www.youtube.com/watch?v=3FtCt4i6Ygk

Extinguisher Placement and Spacing

- Access to Fire Extinguisher provided every 3000 sq ft
- Travel distance to extinguisher within: Class A,D - 75 ft, B - 50 ft
- Minimum one extinguisher per floor
- Multi-story at least one near stairway
- Visit www.OSHA.gov for more Class Type Placement info

Extinguisher Placement and Spacing

- Minimum 10B extinguisher within 50 feet of 5 gallons flammable liquid or 5 pounds flammable gas

Inspection & Testing

- Know what to look for when inspecting!
  - Type of extinguisher
  - Labeling
  - Pins in place?
  - Charged?
  - Annual Maintenance Check
  - Hydrostatic test (Every 5-12 years)
  - Tested by?

    A Qualified Person

- Extinguishers inspected and maintained in accordance with NFPA No. 10A-1970.

Q & A – Quiz

1. What body governs approval of Fire Extinguishers? NFPA (National Fire Protection Assoc.)
2. Nationally recognized testing laboratory (on label) - UL
3. Must do annually?

   Inspect - may need to be recharged, but normally doesn't expire
4. What method do we use to put out a fire?

   PASS

More Info if Time Permits:
http://www.osha.gov/SLTC/etools/evacuation/portable_test.html

Thank You

Visit www.OSHA.gov for more information