

Fire Extinguishers

OSHA Construction
Training Presentation



Outline

- Statistics
- Fight or Flee?
- Extinguisher Basics
- Fire Extinguisher Use
- 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

Fire Safety Statistics

- According to the Bureau of Labor Statistics' Census of Fatal Occupational Injuries Charts, 1992-2007, **fires and explosions accounted for 3% of workplace fatalities** in 2007.
- Remember Stats for our OSHA Fatal Four - 2010: Falls 34%; Electrocutions 10%; Struck By 8%; Caught In, Between 4%
- Estimated 4,800 construction site fires annually causing \$35 million in property damage

Fight or Flee?

- A critical decision when creating a fire safety plan is whether or not employees should fight a small fire with a portable fire extinguisher or simply evacuate.
- Cost associated with maintaining equipment and training employees when hired, as well as annually (all or just some employees).
- So, Employer needs to make a plan whether to have equipment and training or just evacuate.
- When should we never try to fight the fire?
Fire Too Big, Air Unsafe, Environment Too Hot or Smokey, Unsafe Evacuation Path

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 -

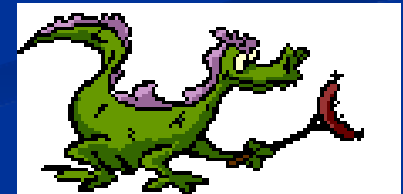
- cool burning fuel,
- displace or remove oxygen, or
- stop the chemical reaction so a fire cannot continue to burn.

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

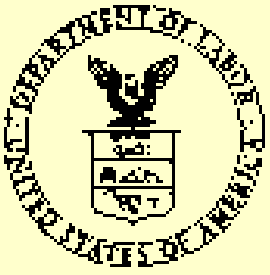
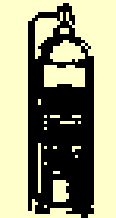
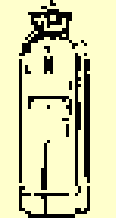
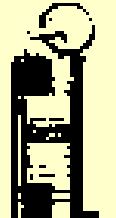

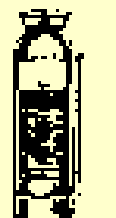
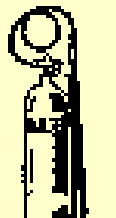
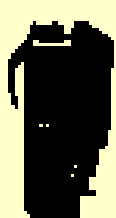


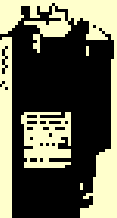




The letters (A, B, C, etc.) represent the type(s) of fire for which the extinguisher has been approved.

The number in front of the A rating indicates how much water the extinguisher is equal to and represents 1.25 gallons of water for every unit of one. For example, a 4-A rated extinguisher would be equal to five (4 x 1.25) gallons of water.

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.



Table F-1 FIRE EXTINGUISHERS DATA

|  | WATER TYPE | | | | FOAM | CARBON DIOXIDE | DRY CHEMICAL | | | |
|--|--|---|--|--|---|--|---|--|--|---|
| |  STORED PRESSURE |  CARTRIDGE OPERATED |  WATER PUMP TANK |  SODA ACID |  FOAM |  CO ₂ | SODIUM OR POTASSIUM BICARBONATE | | MULTI-PURPOSE ABC | |
| | | | | | | |  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 SURFACED) | NO (BUT WILL CONTROL SMALL SURFACED FIRES) | NO (BUT WILL CONTROL SMALL SURFACED 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 PUMP | 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' - 30' | 5' - 20' | 5' - 20' | 5' - 20' |
| MAINTENANCE | CHECK AIR PRESSURE GAUGE MONTHLY | WEIGH GAS CARTRIDGE ADD WATER IF REQUIRED ANNUALLY | DISCHARGE AND FILL WITH WATER ANNUALLY | DISCHARGE ANNUALLY RECHARGE | DISCHARGE ANNUALLY RECHARGE | WEIGH SEAL 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?
- Sound the fire alarm and call the fire department, if appropriate.
- 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.
- Select the appropriate type of fire extinguisher.
- 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>

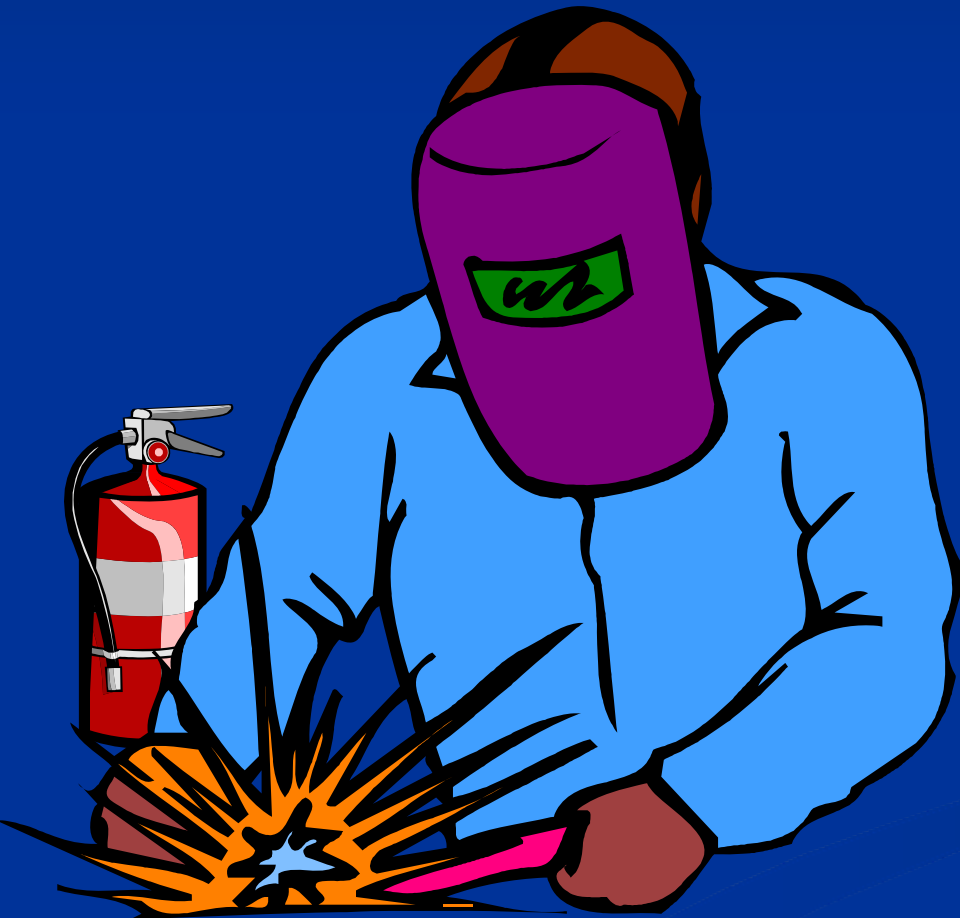
Extinguisher Placement and Spacing

- 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

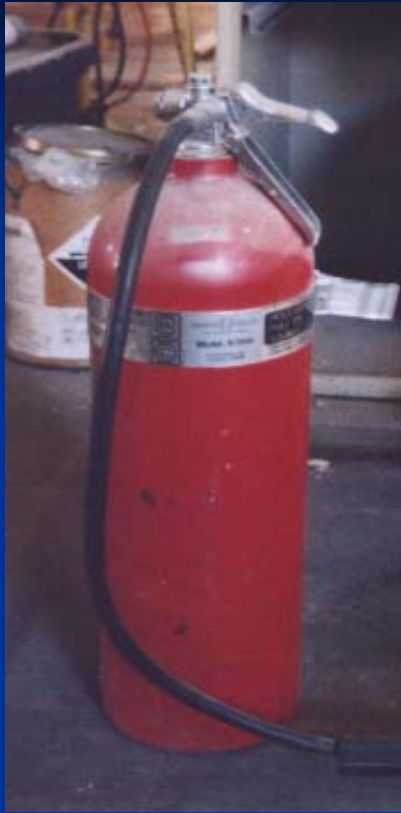


Extinguisher Placement and Spacing

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



Inspection & Testing



DO NOT REMOVE
BY ORDER OF
THE STATE FIRE MARSHAL

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

Certificate of Registration Number _____

Name of Licensee _____

Signature _____

License Number _____

TYPE of WORK

Inspection

Service

(LIST ON BACK)

| | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|------|------|-----|------|-----|-----|-----|------|
| JAN | FEB | MAR | APR | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC | 2004 |
| | | | | | | | | | | | | 2003 |
| | | | | | | | | | | | | 2002 |
| | | | | | | | | | | | | 2001 |
| | | | | | | | | | | | | 2000 |
| | | | | | | | | | | | | 1999 |

- 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**
2. Must be approved by a nationally recognized testing laboratory - **UL**
3. Must do annually?
Inspect - may need to be recharged, but normally doesn't expire



More Questions if Time Permits:

http://www.osha.gov/SLTC/etools/evacuation/portable_test.html

Thank You



Visit www.OSHA.gov for more
information