USING A FIRE EXTINGUISHER

Fire Triangle, Fuel Classifications

When to put out a fire

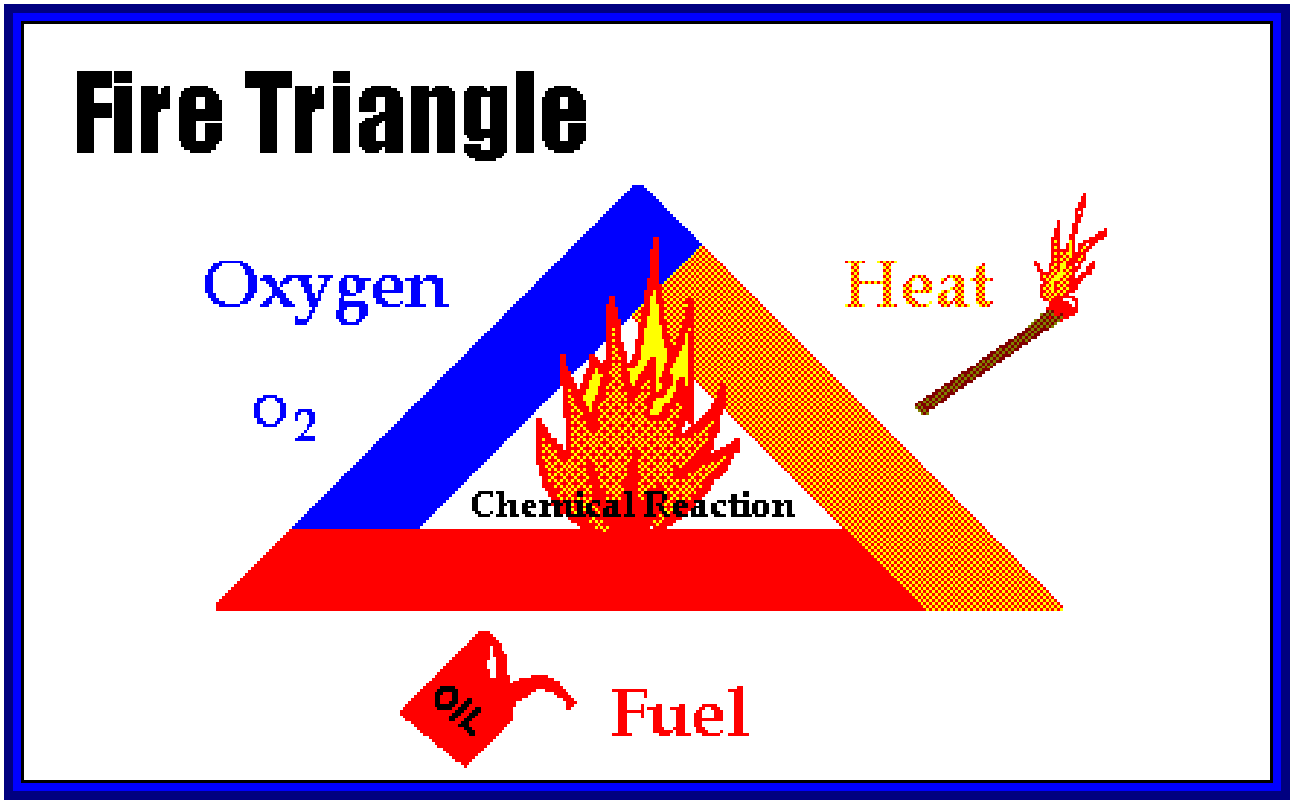
When to exit

Types of Fire Extinguishers

How to use a fire extinguisher

The Fire Triangle

Fire Safety, at its most basic, is based upon the principle of keeping fuel sources and ignition sources separate.



The Fire Triangle Three things must be present at the same time to produce fire:

1. Enough **OXYGEN** to sustain combustion
2. Enough **HEAT** to reach ignition temperature
3. Some **FUEL** or combustible material

Together, they produce the **CHEMICAL REACTION** that is fire

Take away any of these things and the fire will be extinguished!

Fuel Classifications

- **Fires are classified according to the type of fuel that is burning.**
- **If you use the wrong type of fire extinguisher on the wrong class of fire, you might make matters worse.**
- **Its very important to understand the four different fire (fuel) classifications...**

Fuel Classifications

Class A: Wood, paper, cloth, trash, plastics—solids that are not metals.

Class B: Flammable liquids—gasoline, oil, grease, acetone. Includes flammable gases.

Class C: Electrical—energized electrical equipment. As long as it's "plugged in."

Class D: Metals—potassium, sodium, aluminum, magnesium. Requires Metal-X, foam, and other special extinguishing agents.

Fuel Classifications

Most fire extinguishers will have a pictograph label telling you which types of fire the extinguisher is designed to fight.

For example, a simple water extinguisher might have a label like this...

which means it should only be used on Class A fires.

WHAT SHOULD YOU DO IF YOU DISCOVER A

FIRE ?

Rules for Fighting Fires

Fires can be very dangerous and you should always be certain that you will not endanger yourself or others when attempting to put out a fire.

For this reason, when a fire is discovered…

1. **Assist any person in immediate danger to safety, if it can be accomplished without risk to yourself.**
2. **Call 911 or activate the building fire alarm. The fire alarm will notify the fire department and other building occupants and shut off the air handling system to prevent the spread of smoke.**

- **If the fire is small (and Only after having done these 2 things), you may attempt to use an extinguisher to put it out. However . . . .**

Rules for Fighting Fires

- **. . . before deciding to fight the fire, keep these things in mind:**

1. **Know what is burning. If you don't know what's burning, you won't know what kind of extinguisher to use.**
2. **Even if you have an ABC fire extinguisher, there may be something in the fire that is going to explode or produce toxic fumes.**

- **Chances are you *will* know what's burning, or at least have a pretty good idea, but if you don't, let the fire department handle it.**

Rules for Fighting Fires

- **. . . before deciding to fight the fire, keep these things in mind:**

3. **Is the fire spreading rapidly <u>beyond the point where it started?</u> The time to use an extinguisher is at the beginning stages of the fire.**
4. **If the fire is already <u>spreading quickly</u>, it is best to simply evacuate the building.**

As you evacuate a building, <u>*close doors and windows*</u> behind you as you leave. This will help to slow the spread of smoke and fire.

Rules for Fighting Fires

- **Do not fight the fire if:**

✓ **You don't have adequate or appropriate equipment.** **If you don't have the correct type or large enough extinguisher, it is best not to try fighting the fire.**

✓ **You might inhale toxic smoke.** **When synthetic materials such as the nylon in carpeting or foam padding in a sofa burn, they can produce hydrogen cyanide, acrolein, and ammonia in addition to carbon monoxide. These gases can be fatal in very small amounts.**

✓ **Your instincts tell you not to.** **If you are uncomfortable with the situation for any reason, just let the fire department do their job.**

Rules for Fighting Fires – Step One – Notify Others

- If there is a fire alarm box pull it!
- Tell someone (if at work let co-workers know, if at home make sure everyone knows.
- Call 9-1-1

Follow R.A.C.E.

- **Remove or rescue anyone from the immediate danger area**
- **Activate the building fire alarm and report the fire**
- **Confine the fire by closing all doors**
- **Evacuate the building**

Be prepare to escape by

- Knowing at least two ways out of every room. Whether you are at home, work, school or any place.
- Always note where the emergency exits are.
- Know where the emergency meeting places are outside the building.

If your clothes catch fire

- **Remember to Stop – Drop and Roll**
- **Cover your face while you are rolling.**

Rules for Fighting Fires – Step Two – Decide

- **Should you exit the building**

Or

- **Should you use a fire extinguisher to put out the fire?**

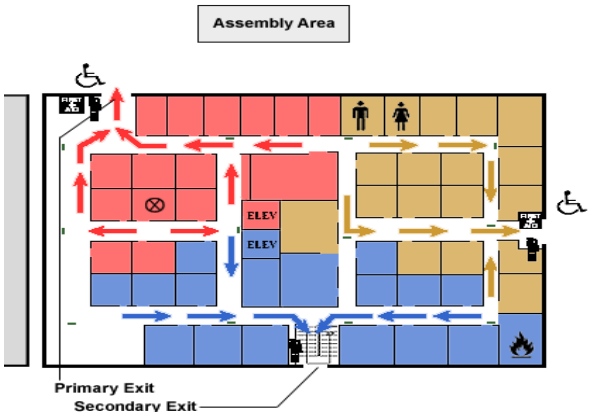
If you hear a fire alarm or smoke detector going off

- Immediately evacuate the building
- Go to a prearranged meeting location
- Do not try to put out the fire with an extinguisher, *unless you have been trained and expected to use an extinguisher.*
- Wait for the "ALL CLEAR" signal before you re-enter the building.

You must exit the building when

- You have been told by your management to exit when you hear the fire alarm,
- You ***MUST*** exit the building **even** if:

  there are fire extinguishers hanging on the walls or accessible to you, except…..



The only **exception** to leaving the building is when you have been…

- specifically told you can do something other than evacuate the building
- specifically trained and expected to use a fire extinguisher

You can use a fire extinguisher only if you:

- Have been trained initially on when and how to use a fire extinguisher

and

- received refresher annual training.

Before using a fire extinguisher, be sure that:

- ✓ **The fire is small and not spreading rapidly!**
  - **A fire can double in size within two or three minutes**
- ✓ **The fire won't block your exit if you can't extinguish it or control it.**
  - **A good way to ensure this is to keep the exit at your back**
- ✓ **You know your fire extinguisher works.**
  - **The fire extinguisher has no dents, leaks, broken hoses, missing pieces or other damage. On fire extinguishers equipped with a gauge, the needle should be in the green zone - not too low or too high.**

Types of Fire Extinguishers

Different types of fire extinguishers are designed to fight different classes of fire.

The 3 most common types of fire extinguishers are:

1. **Water (APW)**
2. **Carbon Dioxide (CO_2)**
3. **Dry Chemical (ABC, BC, DC)**

Choosing the proper extinguisher

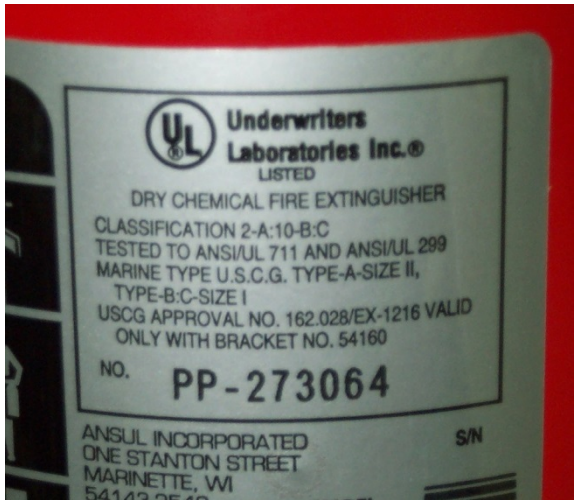
- For ordinary fires involving solids such as wood, paper, and cloth; you can use a water or dry chemical extinguisher with a label that says **Class A or Combination A, B & C.**

Read the labels on all the various types of fire extinguishers near your work area

A **Ordinary Combustibles**
Cloth, Paper, Plastics, Rubber, Wood

B **Flammable Liquids**
Gasoline, Grease, Lacquers, Oil, Paint

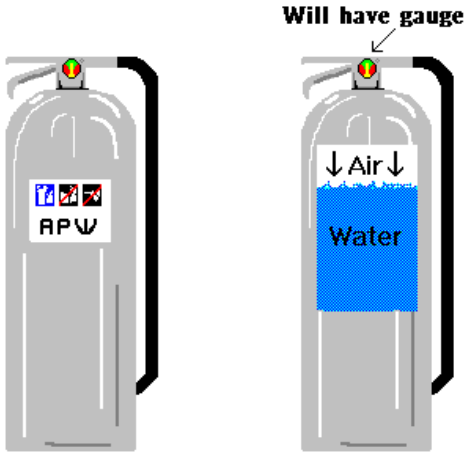
C **Electrical Equipment**
Energized Electrical Equipment, Fuse Boxes, Wiring



Never use water on a fire unless you know what is burning. Water conducts electricity which could spread problems and cause more shorting in the equipment. Water will also carry burning oil, gas and other petroleum products in to new areas to ignite.

Types of Fire Extinguishers

- Water (APW) Fire Extinguishers
- Large silver fire extinguishers that stand about 2 feet tall and weigh about 25 pounds when full.
- APW stands for "Air-Pressurized Water."
- Filled with ordinary tap water and pressurized air, they are essentially large squirt guns.



Types of Fire Extinguishers

- Water (APW) Fire Extinguishers
  - Using water on a flammable liquid fire could cause the fire to spread.
  - Using water on an electrical fire increases the risk of electrocution. If you have no choice but to use an APW on an electrical fire, make sure the electrical equipment is un-plugged or de-energized.
- APW's are designed for Class A fires **only**: Wood, paper, cloth.

Choosing the proper extinguisher

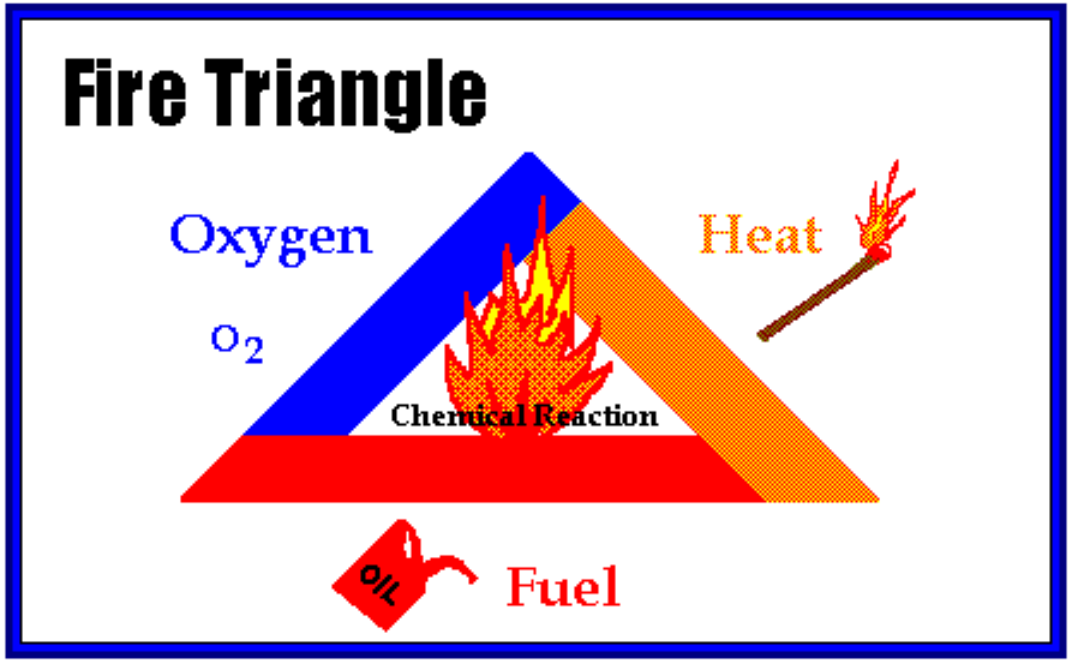
- For fires involving flammable liquids, or electrical equipment, choose a dry chemical extinguisher with a label that says combination B & C or A, B & C or a carbon dioxide extinguisher.

- Electrical fires will mostly be extinguished if the power is turned off first.

Carbon dioxide extinguisher

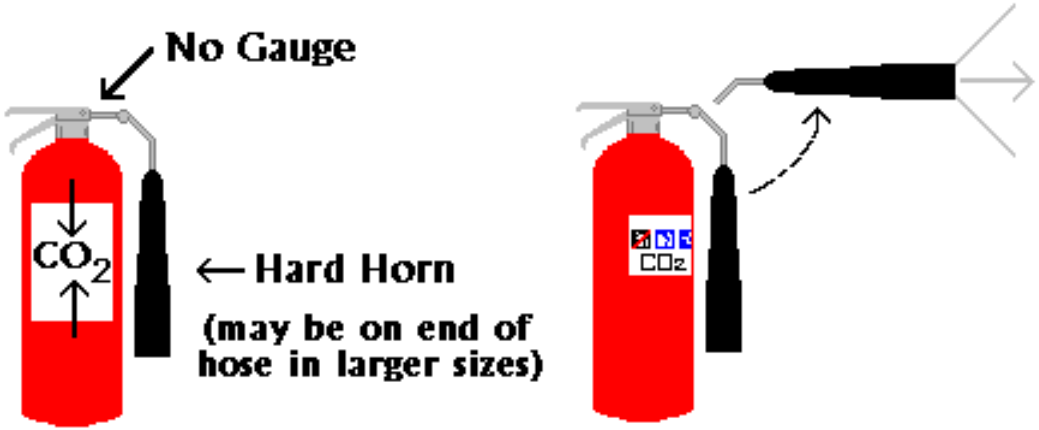
Types of Fire Extinguishers

- Water (APW) Fire Extinguishers
- APW's extinguish fire by taking away the "heat" element of the Fire Triangle.



Types of Fire Extinguishers

- Carbon Dioxide Fire Extinguishers
- CO_2 cylinders are red. They range in size from 5 lbs. to 100 lbs. or larger. On larger sizes, the horn will be at the end of a long, flexible hose.
- The pressure in a CO_2 extinguisher is so great, bits of dry ice may shoot out of the horn!

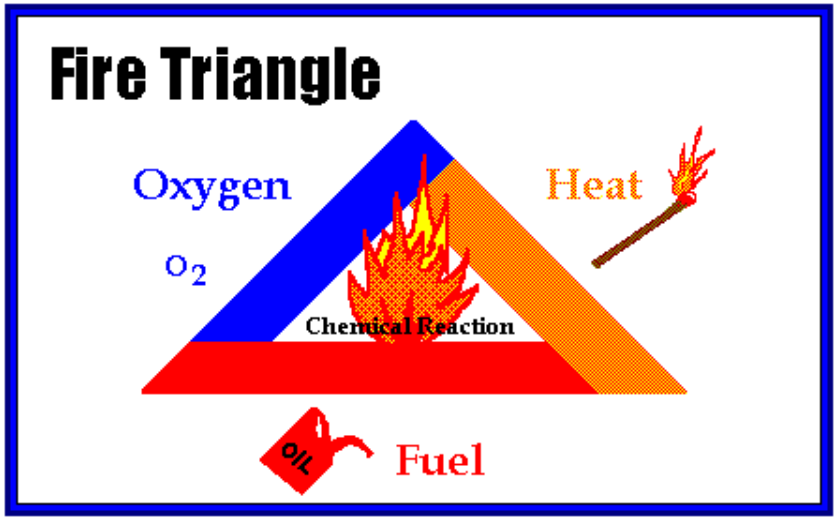


Types of Fire Extinguishers

- Carbon Dioxide Fire Extinguishers
- CO_2s will frequently be found in laboratories, mechanical rooms, kitchens, and flammable liquid storage areas.
- In accordance with NFPA regulations (and manufacturers' recommendations), all CO_2 extinguishers undergo hydrostatic testing and recharge every 5 years.
- CO_2's are designed for Class B and C (Flammable Liquids and Electrical Sources) fires only!

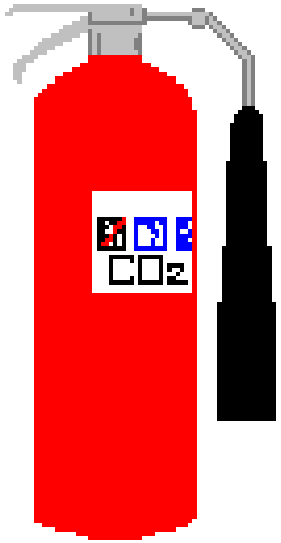
Types of Fire Extinguishers

- Carbon Dioxide Fire Extinguishers
- Carbon dioxide is a non-flammable gas that takes away the oxygen element of the fire triangle. Without oxygen, there is no fire.
- CO_2 is very cold as it comes out of the extinguisher, so it cools the fuel as well.



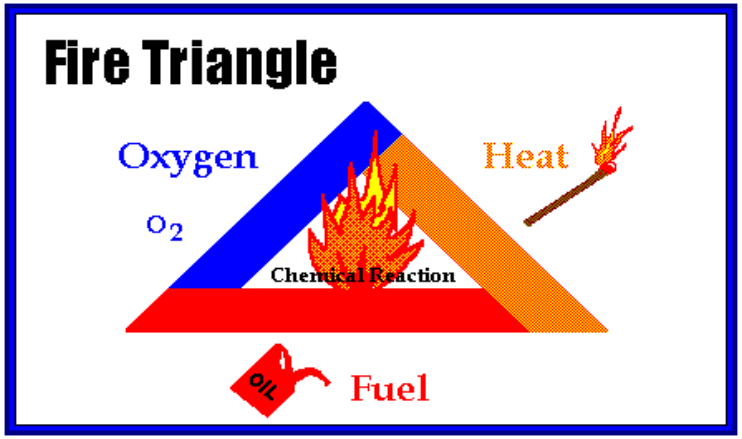
Types of Fire Extinguishers

- Carbon Dioxide Fire Extinguishers
- A CO_2 may be ineffective in extinguishing a Class A fire because it may not be able to displace enough oxygen to successfully put the fire out.
- Class A materials may also smolder and re-ignite.



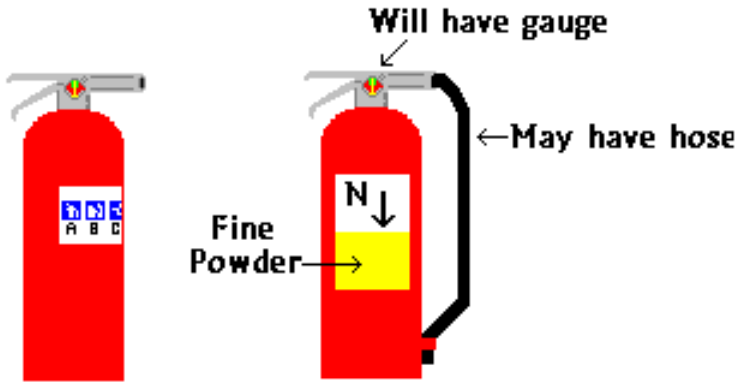
Types of Fire Extinguishers

- Dry Chemical (ABC) Fire Extinguishers
- Dry chemical extinguishers put out fire by coating the fuel with a thin layer of dust. This separates the fuel from the oxygen in the air.
- The powder also works to interrupt the chemical reaction of fire. These extinguishers are very effective at putting out fire.



Types of Fire Extinguishers

- Dry Chemical (ABC) Fire Extinguishers
- ABC extinguishers are red. They range in size from 5 to 20 lbs.
- ABC" fire extinguishers are filled with a fine yellow powder. The greatest portion of this powder is composed of monoammonium phosphate. The extinguishers are pressurized with nitrogen.

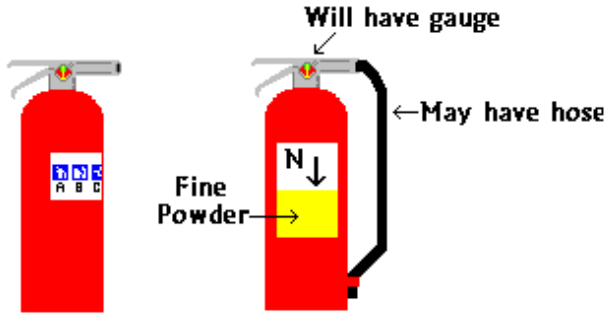


Types of Fire Extinguishers

- Dry Chemical (ABC) Fire Extinguishers
- Dry chemical extinguishers come in a variety of types…

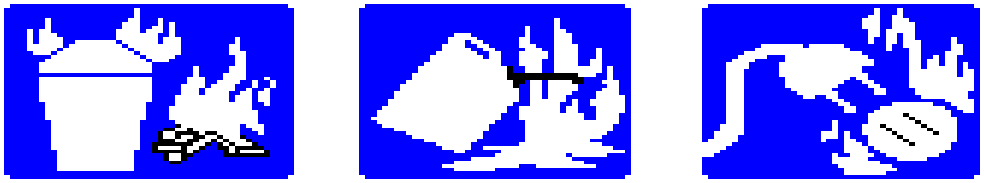
You may see them labeled:

- DC (for "Dry Chemical")
- ABC (can be used on Class A, B, or C fires)
- BC (designed for use on Class B and C fires)



Types of Fire Extinguishers

- Dry Chemical (ABC) Fire Extinguishers
- It is extremely important to identify which types of dry chemical extinguishers are located in your area!
- You don't want to mistakenly use a "BC" extinguisher on a Class A fire thinking that it was an "ABC" extinguisher.
- An "ABC" extinguisher will have a label like this, indicating it may be used on Class A, B and C fires.



Types of Fire Extinguishers

- Dry Chemical (ABC) Fire Extinguishers
- Dry chemical extinguishers with powder designed for Class B and C fires (“BC” extinguishers) may be located in places such as commercial kitchens and areas with flammable liquids.
- You will find ABC’s in public hallways of new buildings, in laboratories, break rooms, offices, chemical storage areas, mechanical rooms, vehicles, etc.

A fire extinguisher should only be used to fight a fire when:

- The fire department has first been notified.
- There is a clear exit behind the person using the fire extinguisher.
- The fire is small and contained (like in a wastepaper basket).

And most important of all…The fire is not spreading rapidly

How to use a fire extinguisher safely:

- Always stand with an exit at your back.
- Stand several feet back and away from the fire, moving closer once the fire starts to diminish.
- Use a slow sweeping motion and aim the fire extinguisher nozzle at the base of the fire.
- If possible, use a "buddy system" to have someone back you up or to call for help if something goes wrong.
- After putting out the fire be sure to watch the area for awhile to ensure the fire does not re-ignite.

Use the "P.A.S.S." system

- **P**ull the pin

- **A**im at the base of the fire from about 8 feet away

- **S**queeze the handle

- **S**weep from side to side at the base of the fire until it is out

How to Use a Fire Extinguisher

- Pull the pin…
- This will allow you to discharge the extinguisher

How to Use a Fire Extinguisher

- **Aim at the base of the fire…**

Hit the fuel.

If you aim at the flames…

- **… the extinguishing agent will fly right through and do no good.**

How to Use a Fire Extinguisher

- **Squeeze the top handle…**
- **This depresses a button that releases the pressurized extinguishing agent.**

How to Use a Fire Extinguisher

- **Sweep from side to side…**
- **.. until the fire is completely out.**
- Start using the extinguisher from a safe distance away, then slowly move forward.
- Once the fire is out, keep an eye on the area in case it re-ignites.

The fire is out – now what?

If the fire goes out:

stay near, it might flare up!

if so, put it out again or Evacuate!

- If the fire doesn't go out -- Evacuate!
- Most extinguishers only last about 10 to 18 seconds.

For More Information

CONTACT YOUR LOCAL FIRE DEPARTMENT OR THE LINCOLN COUNTY FIRE MARSHAL'S OFFICE

704-736-8516