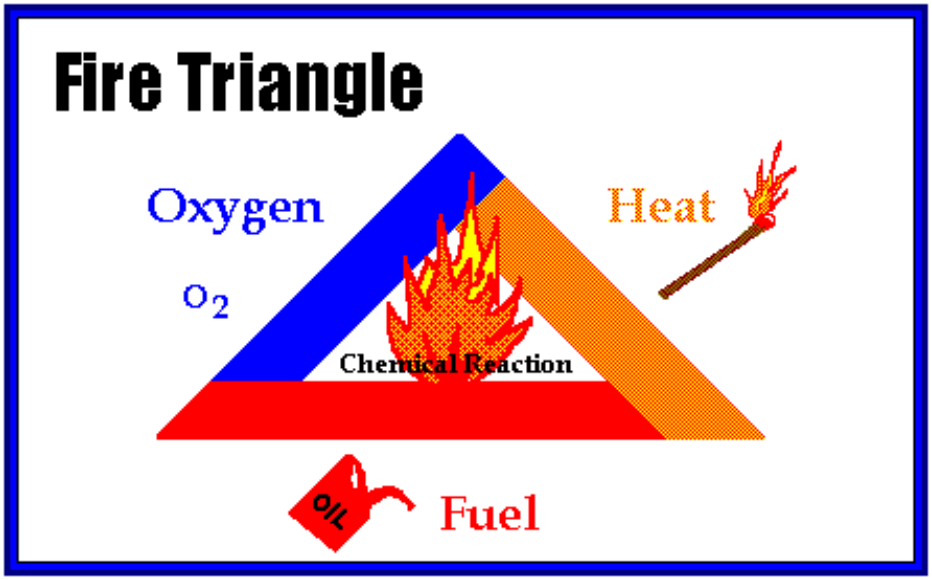
CITY EMPLOYEE FIRE SAFETY COURSE

Performance Objectives

- After studying 5 sections of the module, participants should be able to:
- Identify three elements of the fire triangle,
- Identify three classifications of fuels,
- Explain the uses of three types of extinguishers,
- Identify two rules of fighting fires, and
- list the four step PASS process for using an extinguisher.



Four things must be present at the same time in order to produce fire:

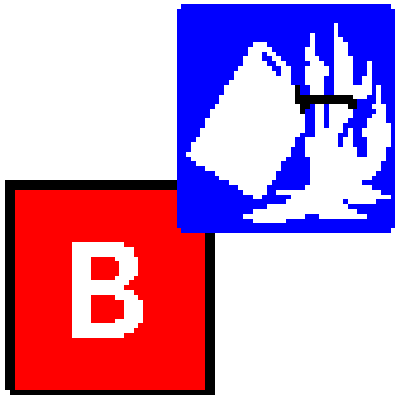
- Enough oxygen to sustain combustion,
- Enough heat to raise the material to its ignition temperature,
- Some sort of fuel or combustible material, and
- The chemical, exothermic reaction that is fire.

Oxygen, heat, and fuel are frequently referred to as the "fire triangle." Add in the fourth element, the chemical reaction, and you actually have a fire "tetrahedron."

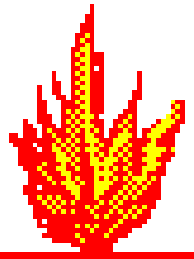
The important thing to remember is: take any of these four things away, and you will not have a fire or the fire will be extinguished.

Essentially, fire extinguishers put out fire by taking away one or more elements of the fire triangle/tetrahedron.

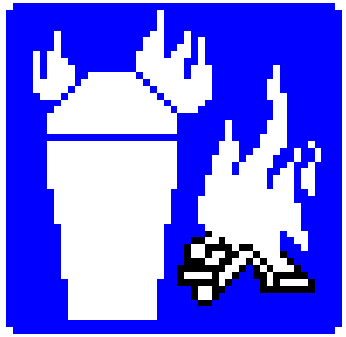
Fire safety, at its most basic, is based upon the principle of keeping fuel sources and ignition sources separate.



Classification of Fuels

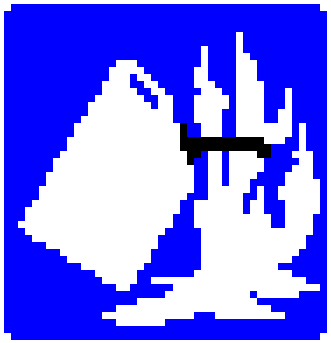


Not all fires are the same, and they are classified according to the type of fuel that is burning. If you use the wrong type of fire extinguisher on the wrong class of fire, you can, in fact, make matters worse. It is therefore very important to understand the four different fire classifications.



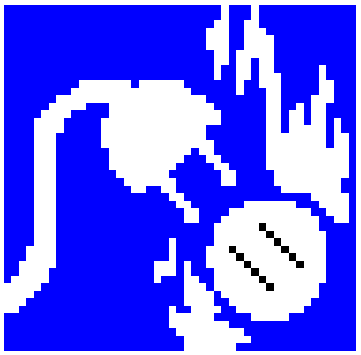
Class A - Wood, paper, cloth, trash, plastics.

Solid combustible materials that are not metals.



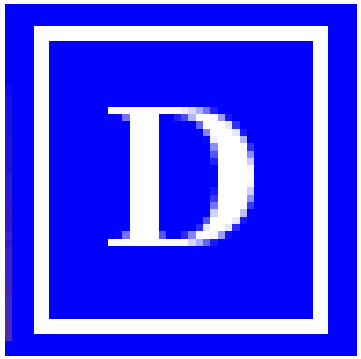
Class B - Flammable liquids: gasoline, oil, grease, acetone.

Any non-metal in a liquid state, on fire. This classification also includes flammable gases.



Class C - Electrical: energized electrical equipment

As long as it's "plugged in," it would be considered a class C fire.

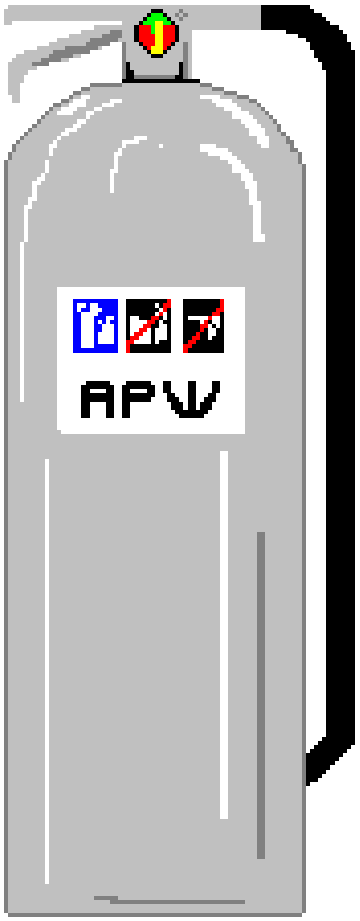


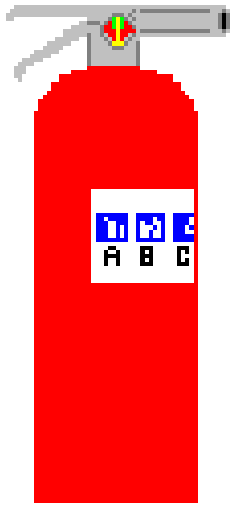
Class D - Metals: potassium, sodium, aluminum, magnesium

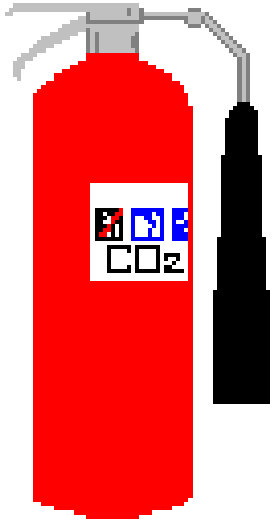
Unless you work in a laboratory or in an industry that uses these materials, it is unlikely you'll have to deal with a Class D fire. It takes special extinguishing agents (Metal-X, foam) to fight such a fire

Most fire extinguishers will have a pictograph label telling you which classifications of fire the extinguisher is designed to fight. For example, a simple water extinguisher might have a label like the one above, indicating that it should only be used on Class A fires.

Types of Fire Extinguishers







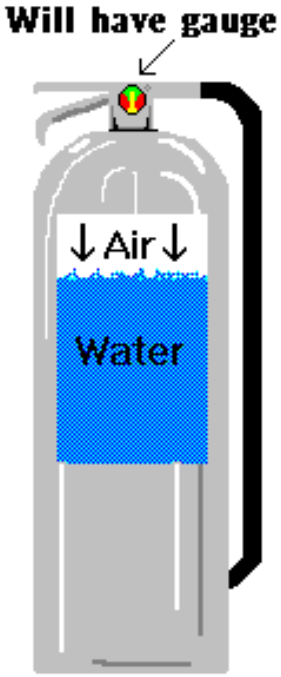
Water (APW)

Carbon Dioxide (CO_2)

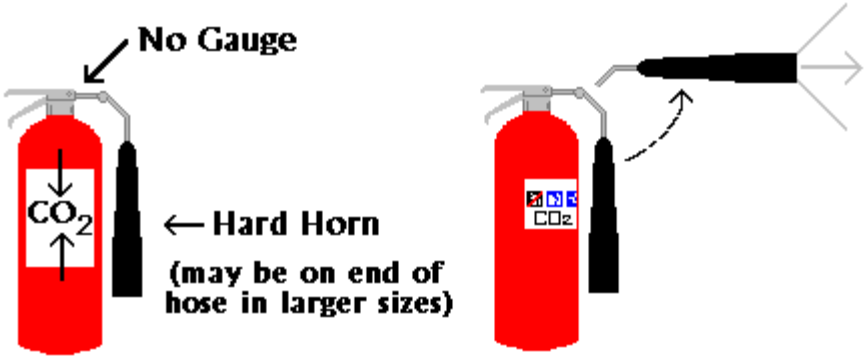
Dry Chemical (ABC,BC,DC)

AIR PRESSURIZED WATER

- APW stands for "air-pressurized water." APWs are large, silver extinguishers that are filled about two-thirds of the way with ordinary tap water, then pressurized with normal air. In essence, an APW is just a giant squirt gun.
- APWs stand about 2 feet tall and weigh approximately 25 pounds when full.



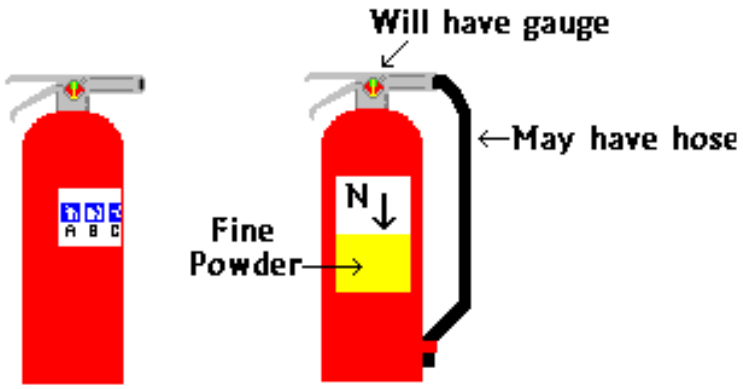
Carbon Dioxide Extinguisher



- Carbon Dioxide extinguishers are filled with non-flammable carbon dioxide gas under extreme pressure. You can recognize a CO2 extinguisher by its hard horn and lack of pressure gauge. The pressure in the cylinder is so great that when you use one of these extinguishers, bits of dry ice may shoot out the horn.
- CO2 cylinders are red and range in size from 5 lbs to 100 lbs or larger. In the larger sizes, the hard horn will be located on the end of a long, flexible hose

- Carbon Dioxide is a non-flammable gas that extinguishes fire by displacing oxygen, or taking away the oxygen element of the fire triangle. The carbon dioxide is also very cold as it comes out of the extinguisher, so it cools the fuel as well. **CO2s may be ineffective at extinguishing Class A fires** because they may not be able to displace enough oxygen to successfully put the fire out. Class A materials may also smolder and re-ignite.
- CO2s will frequently be found in laboratories, mechanical rooms, kitchens, and flammable liquid storage areas.

Dry Chemical Extinguisher (ABC)



- Dry Chemical Extinguishers come in a variety of types. You may see them labeled:
- "**DC**" short for "dry chem"
- "**ABC**" indicating that they are designed to extinguish class A,B,and C fires, or
- "**BC**" indicating that they are designed to extinguish class B and C fires.
- "ABC" fire extinguishers are filled with a fine yellow powder. The greatest portion of this powder is composed of monoammonium phosphate. Nitrogen is used to pressurize the extinguishers.

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:
  - Assist any person in immediate danger to safety, if it can be accomplished without risk to yourself.
  - Activate the building fire alarm system and notify the fire department by dialing 911.
  - Only after having done these two things, if the fire is small, you may attempt to use an extinguisher to put it out.

You don't know what is burning?

If you don't know what is burning, you don't know what type of extinguisher to use. Even if you have an ABC extinguisher, there may be something in the fire which is going to explode or produce highly toxic smoke. 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.

If the fire is spreading rapidly beyond the spot where it started

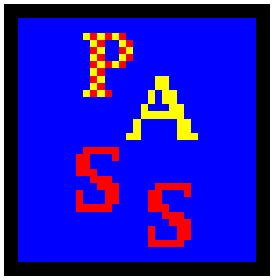
The time to use an extinguisher is in the incipient, or beginning, stages of a fire. If the fire is already spreading quickly, it is best to simple evacuate the building, closing doors and windows behind you as you leave.

Do Not Fight the Fire If:

- You don’t have adequate or appropriate equipment.
- You might inhale toxic smoke
- Your instincts tell you not to
- The final rule is to always position yourself with an exit or means of escape at your back before you attempt to use an extinguisher to put out a fire.

How to Use a Fire Extinguisher

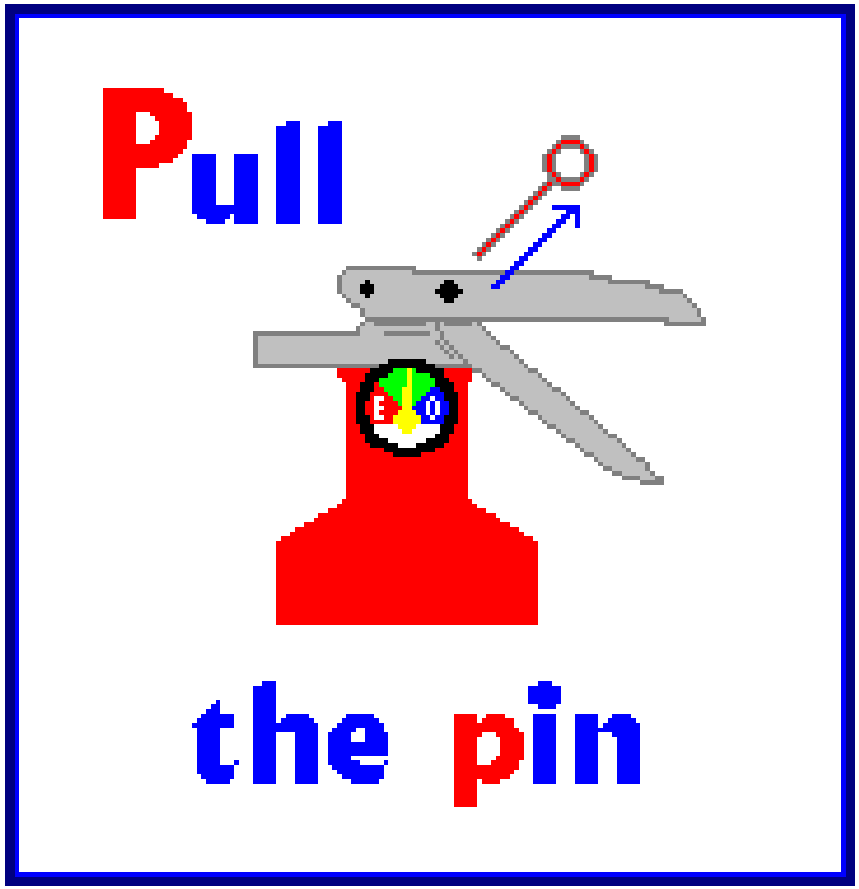
PASS



Pull, Aim, Squeeze, Sweep

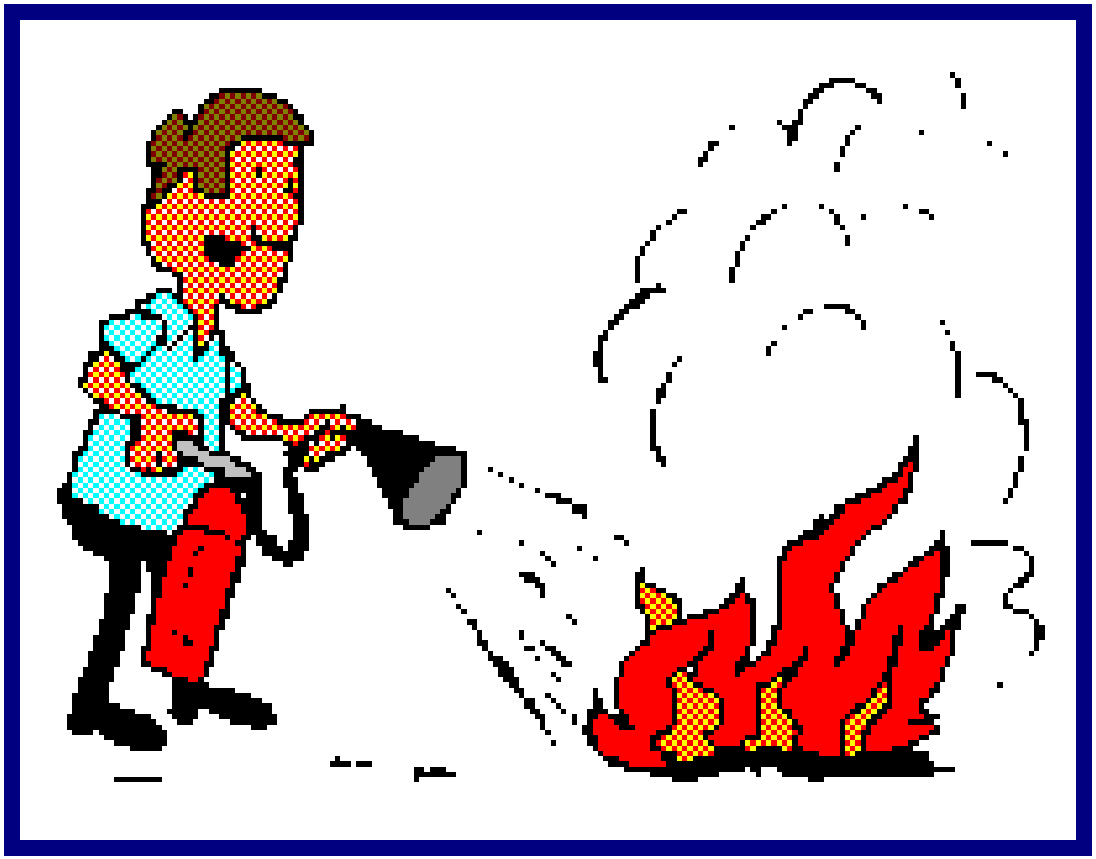
Pull the pin.

This will allow you to discharge the extinguisher.



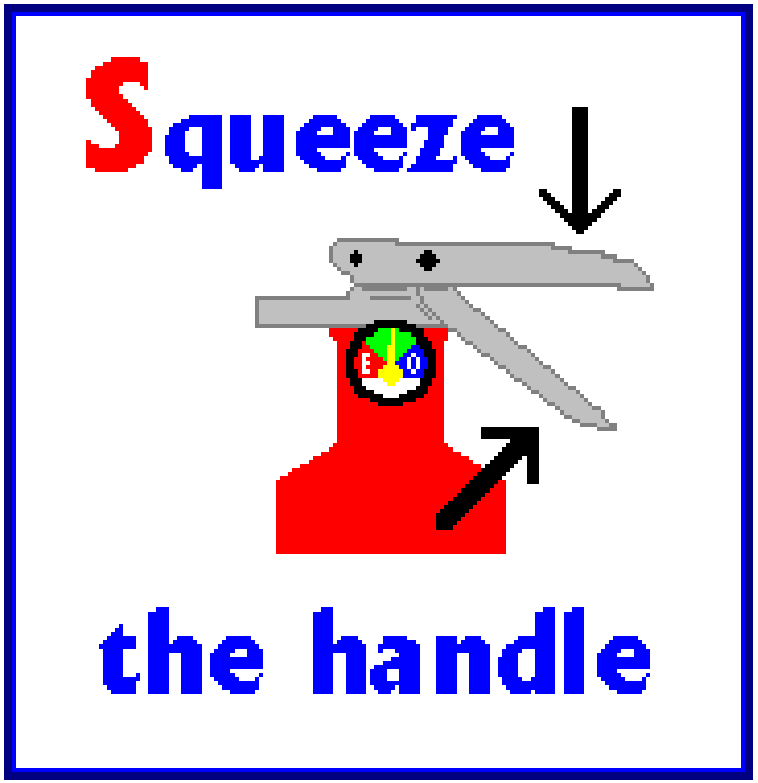
Aim at the base of the fire.

If you aim at the flames (which is frequently the temptation), the extinguishing agent will fly right through and do no good. You want to hit the fuel.



Squeeze the top handle or lever.

This depresses a button that releases the pressurized extinguishing agent in the extinguisher.



Sweep from side to side

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