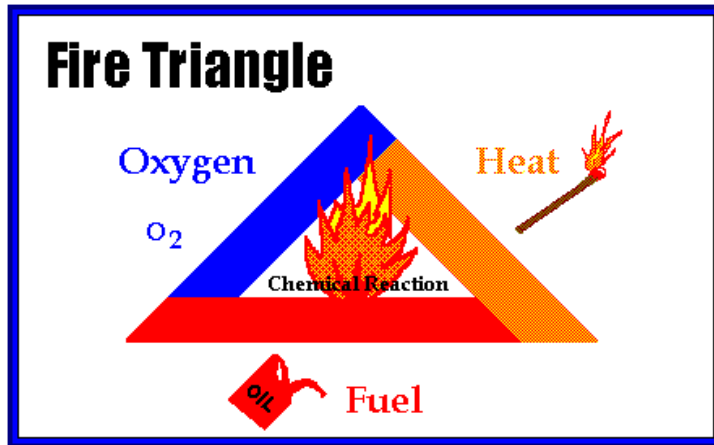


# FIRE EXTINGUISHER TRAINING



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

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 extinguisher on the wrong class of fire, you might make matters worse. It is very important to understand the four different fire (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 is “plugged in.”



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

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.



## TYPES OF FIRE EXTINGUISHERS

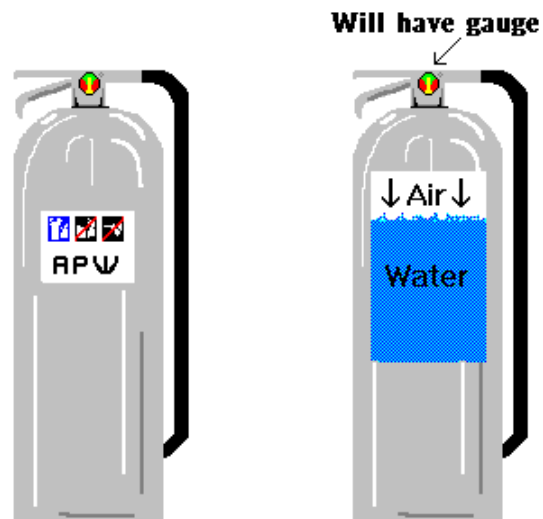
Different types of fire extinguishers are designed to fight different classes of fire. The three most common types of fire extinguishers are:

### 1. Water (APW)

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.



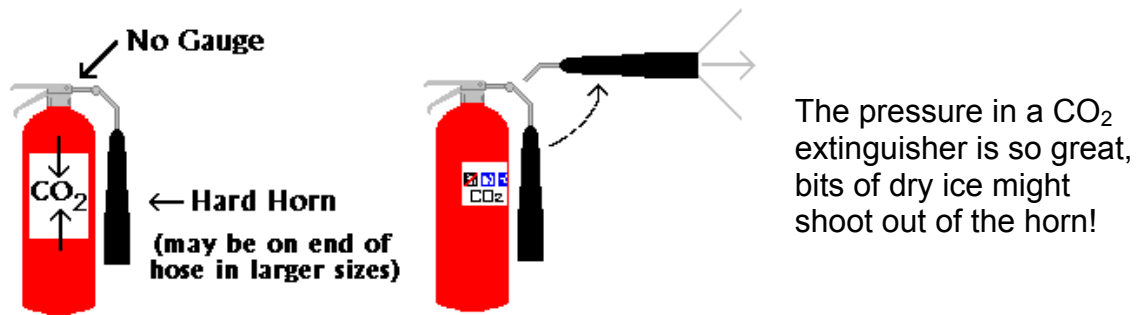
APW's extinguish fire by taking away the “Heat” element of the Fire Triangle.

APW's are designed for Class A fires **only**: Wood, paper, cloth. Here are a couple of reasons you need to be careful about which extinguisher you use:

- ⊙ 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 unplugged or de-energized.

APW's will be found in older buildings, particularly in public hallways, as well as in residence halls on campus. They will also be found in computer laboratories. It is important to remember, however, that computer equipment must be disconnected from its electrical source before using a water extinguisher on it.

## 2. Carbon Dioxide (CO<sub>2</sub>)



CO<sub>2</sub> cylinders are red. They range in size from 5 pounds to 100 pounds or larger. On larger sizes, the horn will be at the end of a long, flexible hose.

CO<sub>2</sub>'s are designed for Class B and C (flammable liquids and electrical sources) fires only!



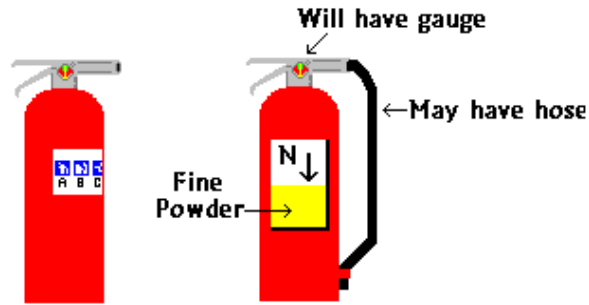
CO<sub>2</sub>'s will frequently be found in laboratories, mechanical rooms, kitchens, and flammable liquid storage areas.

In accordance with NFPA regulations (and manufacturers' recommendations) all CO<sub>2</sub> extinguishers at Cedar Crest College undergo hydrostatic testing and recharge every five years.

Carbon dioxide is a non-flammable gas that takes away the oxygen element of the Fire Triangle. CO<sub>2</sub> is very cold as it comes out of the extinguisher, so it cools the fuel as well.

A CO<sub>2</sub> may not be very effective 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.

### 3. Dry Chemical (ABC, BC, DC)



ABC extinguishers are red. On campus, they range in size from five pounds to 20 pounds.

On the Cedar Crest College campus, ABC extinguishers are filled with a fine, yellow powder. This powder is mostly composed of monoammonium phosphate. The extinguishers are pressurized with nitrogen.

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.

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)

It is extremely important to identify which types of dry chemical fire extinguishers are located in your area!



An “ABC” extinguisher will have a label like this, indicating it may be used on Class A, B, and C fires.

You don’t want to mistakenly use a “BC” extinguisher on a Class A fire thinking that it was an “ABC” extinguisher.

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.

On campus you will find ABC’s in public hallways of buildings, in laboratories, break rooms, offices, chemical storage areas, mechanical rooms, University vehicles, etc.

## HOW TO USE A FIRE EXTINGUISHER

It is easy to remember how to use a fire extinguisher if you remember the acronym, "PASS."

**P**ull

**A**im

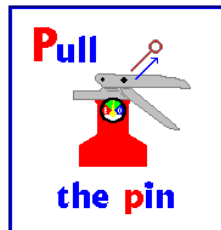
**S**queeze

**S**weep



**P**ull the pin

This will allow you to discharge the extinguisher.



**A**im at the base of the fire

Hit the fuel...if you aim at the flames, the extinguishing agent will pass right through and do no good.



**S**queeze the top handle

This depresses a button that releases the pressurized extinguishing agent.



**S**weep from side-to-side until the fire is completely out.

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



## 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 Campus Police and activate the building fire alarm. The fire alarm will notify 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 two things), you may attempt to use an extinguisher to put it out.

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

- **Know what is burning.** If you don't know what is burning, you won't know what kind of extinguisher to use.
  - Even if you have an ABC fire extinguisher, there might be something in the fire that is going to explode or produce toxic fumes.
- Chances are you will know what is burning, or at least have a pretty good idea, but if you don't, let the fire department handle it.
- Is the fire spreading rapidly beyond the point where it started? The time to use an extinguisher is at the beginning stages of the fire.
  - If the fire is already spreading quickly, it is best to simply evacuate the building.

**As you evacuate a building, close doors and windows behind you as you leave.**

**This will help to slow the spread of smoke and fire.**





## 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.

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.



In case the extinguisher malfunctions, or something unexpected happens, you need to be able to get out quickly. You don't want to become trapped.

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# FIRE EXTINGUISHER TRAINING QUIZ

1. An example of two "Class B" fuels would be:
    - a. Cardboard, newspapers
    - b. Lamp, hot plate
    - c. Grease, paint thinner
  2. An APW (water extinguisher) is safe to use on an electrical fire.
    - a. True
    - b. False
  3. Carbon Dioxide extinguishers are designed for which types of fuels?
    - a. Class B and C
    - b. Class A, B and C
    - c. Class A and C
    - d. Class A and B
  4. Which type of extinguisher has a hard horn on the end of a flexible hose or metal arm?
    - a. APW (air-pressurized water)
    - b. CO<sub>2</sub> (carbon dioxide)
    - c. ABC (dry chemical)
  5. As a general rule, you should not attempt to fight a fire if it is spreading rapidly.
    - a. True
    - b. False
  6. ABC fire extinguishers extinguish fire by cooling it down.
    - a. True
    - b. False
  7. Water will not extinguish most flammable liquid fires.
    - a. True
    - b. False
  8. You should always keep an exit or means of escape at your back when trying to fight a fire.
    - a. True
    - b. False
  9. The three elements of the fire triangle are:
    - a. Water, a heat source, and fuel
    - b. Oxygen, water, and fuel
    - c. Oxygen, fuel, and a heat source
    - d. Fuel, oxygen, and earth
  10. Do you know where the nearest fire extinguisher is in your work area?
    - a. Yes
    - b. No
-

## Answers

1. C
  2. B
  3. A
  4. B
  5. A
  6. B
  7. A
  8. A
  9. C
  10. A
-