

# FIRE EXTINGUISHER TRAINING PROGRAM

**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.

These three elements form the fire triangle that is necessary for a fire to burn.

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:** Fires in ordinary combustibles, such as wood, cloth, paper, rubber, and many plastics.

**Class B:** Fires in flammable or combustible liquids, flammable gasses, greases, and similar materials.

**Class C:** Fires in live electrical equipment. When electrical equipment is deenergized, extinguishers for class A or B fires may be used.

**Class D:** Fires in certain combustible metals, such as magnesium, titanium, zirconium, sodium and potassium. These fires require Metal-X, foam, and other special extinguishing agents.

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

## TYPES OF FIRE EXTINGUISHERS

Different types of fire extinguishers are designed to fight different classes of fire. The three mostly commonly used extinguishers on the Boston College Campus are:

### 1. Water (Pressurized water)

Water extinguishers are large, silver fire extinguishers. They stand about two feet tall and weigh about 25 pounds when full. They are filled with ordinary tap water and pressurized air.

#### How do they work?

Pressurized water extinguishers put out fires by taking the Heat out of the fire triangle.

#### When do you use water extinguishers?

They are designed for Class A fires only. Wood, paper, cloth fires are examples of Class A fires.

Never use a water extinguisher on a flammable liquid fire since it may cause the fire to spread.

Using water on an Electrical Fire increases the risk of electrocution. However, it is important to remember that it is only an electrical fire as long as the appliance is plugged into an electrical source.

## 2. Carbon Dioxide Extinguishers

Carbon Dioxide fire extinguishers are red. They can range in size from 5 pounds to 100 pounds or larger. They generally have a horn on the end of the hose or metal arm which is attached to the cylinder.

### When do you use Carbon Dioxide Extinguishers?

Carbon Dioxide extinguishers are designed exclusively for Class Band C fires only! They will frequently be found in flammable liquid storage areas, laboratories and mechanical rooms.

### How do they work?

Carbon Dioxide is a non-flammable gas that takes away the oxygen from the fire triangle. Carbon Dioxide is extremely cold when it comes out of the extinguisher, so it also cools the fuel from the fire triangle.

A Carbon Dioxide extinguisher may not be very effective in extinguishing Class A fires because it may not be able to displace enough oxygen to successfully put the fire out. Class A materials may also continue to smolder and reignite.

## 3. Dry Chemical Extinguishers

Dry Chemical extinguishers are red. On campus they range in size from two and one half pounds to twenty pounds.

ABC extinguishers are filled with a fine, yellow powder. The powder is mostly composed of monoammonium phosphate. The extinguishers are pressurized with nitrogen gas as an expellant.

### When do you use dry chemical extinguishers?

Dry Chemical extinguishers are multi purpose fire extinguishers and can be used on Class A, B and C fires. Therefore, they can be used on paper, wood, cloth, flammable liquids and fires involving energized electrical equipment.

### How do they work?

Dry Chemical extinguishers put out fires by coating the fuel with a thin layer of chemical dust. This in turn separates the fuel from the oxygen in the air. The powder also has the ability to interrupt the chemical chain reaction of a fire. These are the most common extinguishers found on campus since they are very effective at extinguishing fire.

On campus you will find ABC extinguishers in kitchens in residence halls, hallways, in laboratories offices, chemical storage areas mechanical rooms and even in motor vehicles.

## 4. K-Class Extinguisher

A K-Class extinguisher contains a wet chemical that is composed of a Potassium based solution.

### When do you use a K-Class Extinguisher?

K-Class extinguishers are used on kitchen fires that involve high temperature cooking oils.

### How do they work?

The K-Class extinguisher has a special nozzle on the end of the the hose that atomizes the solution and distributes it over the hazard area. The solution provides both a cooling effect on the fire as well as forming a blanket on top of the fire this cuts off the oxygen.

The agent, is discharged as a fine spray directly at cooking appliances which reduces the possibility of splashing the hot grease.

The only place that you will find K-Class fire extinguishers on campus are in kitchens that have deep fat fryers.

## HOW TO USE A FIRE EXTINGUISHER

-It is east to remember how to use a fire extinguisher if you remember the acronym **PASS**.

**P**ull

**A**im

**S**queeze

**S**weep

**Pull** the pin

This will remove the safety mechanism and allow you to discharge the extinguisher.

**Aim** at the base of the fire

Make sure that you hit the fuel source of the fire. If you simply aim at the flames, the extinguishing agent will pass right through and do no good.

**Squeeze** the handles

This depresses a button that releases the pressurized extinguishing agent.

**Sweep** 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 close watch on the area in case it reignites.

## **RULES FOR FIGHTING FIRES**

Fires are very dangerous and you must be very certain that you will not endanger yourself or any one else when attempting to extinguish a fire. For this reason the very first action that you should take when a fire is discovered is:

1. Assist any person in immediate danger to safety, if you can without any risk to your own safety.
2. Call 911 or activate the building fire alarm by pulling a pull station. The fire alarm will then notify the fire department as well as all other building occupants.

Only after completing the above two items, and if the fire is small, you may attempt to use an extinguisher to put it out.

However, before attempting to fight the fire, remember the following items:

- ✓ Know what is burning. If you don't know what is burning, you won't know the proper extinguisher to use to put the fire out.
- ✓ Is the fire spreading rapidly? The only time to use a fire extinguisher is at the initial stages of the fire. If the fire is already spreading quickly, it is best to simply evacuate the building.
- ✓ Be sure that you are comfortable using a fire extinguisher. If you are not comfortable using an extinguisher simply evacuate the building and let the fire department handle it
- ✓ Never allow the fire to get between you and the exit. Always position yourself with an exit or other means of escape at your back in case the extinguisher malfunctions, or something unexpected happens. This will keep you from getting trapped.

## FIRE EXTINGUISHER TRAINING QUIZ

1. An example of two Class A fuels would be?
  - a. Cardboard, newspapers
  - b. Lamp, hot plate
  - c. Grease, paint thinner
  
2. A water extinguisher is safe to use on an electrical fire?
  - a. True
  - b. False
  
3. The three elements of the fire triangle are:
  - a. Fuel, oxygen and smoke
  - b. Oxygen, water and fuel
  - c. Fuel, a heat source and oxygen
  - d. Fuel, water and a heat source
  
4. You should always keep an exit or means of escape at your back when trying to fight a fire:
  - a. True
  - b. False
  
5. Water will extinguish most flammable liquid fires.
  - a. True
  - b. False

6. ABC fire extinguishers extinguish fires by cooling them down.
  - a. True
  - b. False
  
7. As a general rule it is best to attempt to extinguish a fire prior to activating the fire alarm.
  - a. True
  - b. False
  
8. Which type of extinguisher has a hard horn on the end of a hose or a metal arm?
  - a. Pressurized water
  - b. K-Class
  - c. ABC dry chemical
  - d. Carbon Dioxide
  
9. Which type of fire extinguisher is the most commonly found on the campus?
  - a. Pressurized water
  - b. Carbon Dioxide
  - c. ABC dry chemical
  - d. K-Class
  
10. Do you know where the nearest fire extinguisher is located in your work area or residence?
  - a. Yes
  - b. No

## ANSWERS TO QUIZ

1. a
2. b
3. c
4. a
5. b
6. b
7. b
8. d
9. c
10. a