

Fire Safety and Portable Fire Extinguishers

Part of the Avitus Group 5-in-1
Safety Training Series



AVITUS GROUP®
Simplify, Strengthen and Grow Your Business

Introduction

Section 1: Introduction

Section 2: Portable Fire Extinguishers

Section 3: Inspection and Maintenance of Fire Extinguishers

Section 4: Using a Fire Extinguisher

Section 5: Fire Safety Final Points

Contact Information

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The materials and accompanying video provide general information on the subject with practical application for use in the workplace. These materials are designed to increase education and awareness to help the learner identify situations when they need to get their supervisor or employer involved. It is the on-site employer's responsibility to make sure the employees are trained in proper safety practices and that those practices are followed. Avitus Group always recommends contacting a certified Safety professional and/or legal counsel that specializes in the Safety laws specific to your state.

Safety laws and regulations change often at the federal, state, and local level, therefore some information may not be current. Because of the constant changes to the law, these materials repeatedly recommend contacting your Safety department or your Avitus Group representative for help.

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Our purpose: Fast, effective, and practical training that improves productivity in the workplace.

Tips: Each section only take a few minutes. If multiple section are to be covered, keep the fast pace going. First watch the video content for the selected section. Stop the video and answer the questions at the end of the section. If watching in a group, each learner should answer the questions in the manual first and then discuss the answers with the group.

SECTION 1

Introduction

Fire safety is based on the principle of keeping fuel sources and ignition sources separated.

Fire safety can be achieved through:

Common Sense

Safety Code Compliance

Utilization of Best Practices.

The goal of all occupancies and operations to eliminate the threat of fire and respond appropriately when a fire does occur.

The Fire Triangle

[graphic-oxygen, heat, fuel]

The first step in fire safety is to understand the necessary ingredients for most fires. The fire triangle illustrates the three essential elements that must be present for a fire event to occur. A fire can be prevented or extinguished if one of these elements is removed.

A fire needs three basic elements to occur:

Heat

Fuel

Oxygen

Combustion is the chemical reaction that feeds a fire more heat and allows it to continue. If a fire is in progress and one of these three elements of the fire triangle is removed or the chemical reaction is interrupted, the fire will be extinguished.

Businesses and occupancies of all types must constantly work to eliminate hazards associated with the ignition of a fire. There are two main ways to prevent most fires:

1. Safe storage practices
2. The proper use of electricity

Safe Storage Practices

Maintain a clean work environment. Good housekeeping is very important and often clutter not only can contribute fuel to a fire, if it's near exits and emergency equipment, can be deadly.

Store and use chemicals safely. Read the label and the Safety Data Sheet to determine proper handling and storage.

SECTION 1

Introduction

Safe Storage Practices

Maintain a clean work environment. Good housekeeping is very important and often clutter not only can contribute fuel to a fire, if it's near exits and emergency equipment, can be deadly.

Store and use chemicals safely. Read the label and the Safety Data Sheet to determine proper handling and storage.

The Proper Use of Electricity

Maintain machinery to prevent overheating and friction sparks. Report any electrical hazards like faulty wiring and malfunctioning electrical equipment. Always maintain clear paths to breaker boxes.

SECTION 1

Questions

Questions:

1. Describe the Fire Triangle.
2. Name the two main ways to prevent most fires.

SECTION 2

Portable Fire Extinguishers

Portable fire extinguishers are the first line of response to extinguish small fires, or those that are in their very early phase, also known as the “incipient” stage.

Extinguishing a Fire

The steps to extinguishing a fire begin with first making sure everyone is aware that a fire is occurring. Pull the fire alarm and tell someone to call 911 and that you need some help.

Evaluate the size and volatility of the fire to determine if it is able to be fought with an extinguisher.

If it looks like a fire extinguisher can handle it, go get one while identifying your escape route in case it can't be contained.

If you see items near the fire that could be explosive or if there is toxic smoke present, exit the building and be available to tell the first responders and fire fighters the location of the fire.

Fire and Extinguisher Classifications

There are five primary types of fire extinguishers and each are designed to put out different kinds of fires.

Class A



Class A It is designed for ordinary combustible materials like:

- Wood
- Paper
- Cloth
- Most plastics and other solids that are not metals.

Class A extinguishers are often found in homes and businesses.

Class B



Class B fires involve flammable liquids:

- Gasoline
- Oil
- Grease
- Propane
- Oil-based paints

Class B extinguishers are often found in homes and businesses.

SECTION 2

Portable Fire Extinguishers

Class C



Class C are for use with electrical equipment such as:

Appliances

Tools

Any equipment that is plugged into electricity

Class C extinguishers are often found in homes and businesses.

Class D



Class D extinguishers are for use with flammable metals or alloys:

Magnesium

Titanium

Potassium

Aluminum

Class D are generally only found in factories. If water were used to try and put out fires containing these metals it would actually make the fire much worse due to the chemical reaction these metals have with water.

Class K



Class K These extinguishers are for use with:

Vegetable oils

Animal oils

Fats

Class K are found in commercial kitchens like restaurants, cafeterias, and caterers. Any business that has deep fryers, cooking devices, stoves and ovens.

SECTION 2

Portable Fire Extinguishers

Fire Extinguisher Usage

There are multipurpose fire extinguishers that might be labeled "B-C" or "A-B-C", but there is no single fire extinguisher that can extinguish all classes of fire.

The type of material burning will determine the type of fire extinguisher that is needed to extinguish the fire.

Look at the letters or symbols displayed on the extinguisher to determine which class of fire it can be used on.

Understand the capabilities of the fire extinguishers in your workplace or home in ADVANCE of an emergency occurs where it may needed.

Types of Fire Extinguishers

Air Pressurized Water (AWP) Fire Extinguishers

Commonly referred to as the "Silver Bullet".

The AWP extinguisher is two feet tall and weighs approximately 25 pounds.

The AWP uses a combination of water and air pressure is contained inside of the extinguisher.

Water flows out of the extinguisher vessel through a hose that should be directed at the fire.

The AWP extinguisher is only suited for Class A fires.

Carbon Dioxide Fire Extinguishers

These type of fire extinguishers utilize the oxygen displacement qualities of the CO₂ gas to eliminate oxygen from the combustion process.

Carbon Dioxide fire extinguishers are effective on Class B and C fires.

They are ineffective on Class A fires because material will often re-ignite because the extinguishing agent failed to absorb deep-seeded heat that will sustain the combustion process.

Multi-purpose A-B-C Dry Chemical Fire Extinguishers

These can be used on fire Classes A, B, and C.

The active ingredient is composed monoammonium phosphate.

Many homeowners prefer the multipurpose A-B-C dry chemical fire extinguishers because it covers just about any type of fire that could happen.

SECTION 2

Portable Fire Extinguishers

Class K Fire Extinguishers

Class K fire extinguishers are intended for cooking media fires.

They utilize a wet chemical agent with a low pH and special potassium acetate base that reacts with the flammable oils and greases that are burning.

The flammable liquid begins to react with the chemical agents and starts to form a “foam-like” substance that ultimately extinguishes the fire.

Use the Correct Fire Extinguisher

Using the wrong type of extinguishing agent on certain classes of fire can have serious and tragic consequences.

SECTION 2

Questions

Questions:

1. List the four types of combustible materials Class A fire extinguishers are designed to handle.
2. List the five types of combustible materials Class B fire extinguishers are designed to handle.
3. What types of fires are Class C fire extinguishers designed to handle?

SECTION 3

Inspection and Maintenance of Fire Extinguishers

Fire Extinguisher Design



Locking Pin and Seal: prevents accidental discharge when picking up the fire extinguisher and would need to be removed before use.

Discharge Lever and the Carrying Handle.

Pressure Gauge: which is not found on CO2 fire extinguishers.

Data Plate: located on the body of the extinguisher

Inspection and Maintenance of Fire Extinguishers

The codes and standards for fire extinguishers are established by the National Fire Protection Association or NFPA.

Fire extinguishers are required to be inspected and maintained annually by a qualified fire extinguisher service technician.

SECTION 3

Inspection and Maintenance of Fire Extinguishers

A fire extinguisher that has been certified by a qualified fire extinguisher technician will have an inspection tag attached to it.

The inspection tag will indicate the month and year that the extinguisher was serviced.

The inspection tag shows that the licensed fire extinguisher vendor has inspected the fire extinguisher on an annual basis.



There is a grid printed on the back of the inspection tag to allow responsible building occupants to document that the extinguisher has been visually inspected on a monthly basis.



Make sure that the fire extinguishers seal or tamper indicator is in place.

The pin is designed to “lock-out” the discharge lever from use until it is needed and the seal or tamper indicator helps secure the pin in place.

Check the gauge which indicates that the extinguisher is properly charged.

SECTION 3

Questions

Questions:

1. How often do fire extinguishers in the workplace have to be inspected by a qualified fire extinguisher service technician?
2. How often does the responsible building occupant have to inspect the fire extinguishers?

SECTION 4

Using a Fire Extinguisher

The first step to using a fire extinguisher is to pull the fire alarm and tell someone to dial 911 and that you need help.

The second step is to make sure you have a clear path of escape.

The third step is to match the volume of fire with the capabilities of the fire extinguisher. This is essential to successfully extinguish a fire.

Depending on the size of the extinguisher and type of extinguishing agent, the total dispersement times will vary. The larger the capacity of the extinguisher, the longer it will last.

PASS

You must always remember to "PASS" not fail when you utilize the fire extinguisher.

"P" Pull the ring pin and allow the discharge lever to operate.

"A" Aim the nozzle at the base of the fire.

"S" Squeeze the discharge lever.

"S" Sweep the extinguishing agent onto the base of the fire by utilizing a motion with your hand and arm that allows the agent to be evenly distributed onto the burning material.

Two Common Mistakes

Applying the agent in a direct manner without a sweeping motion. This often extinguishes the fire in that area while the rest of the fire continues to burn.

Another common mistake is to aim the nozzle at the flames instead of the base of the fire.

When a proper sweeping motion is utilized and the spray is aimed at the base of the fire, extinguishing agents will generally have a positive impact on putting out the fire.

SECTION 4

Using a Fire Extinguisher

Warnings

Never get in a position where the fire or potential spread of the fire can impede your escape.

Always have your back to a clear path of escape.

If a retreat from a fire is required, attempt to close any doors along the path of escape to help confine the spread of smoke and fire.

Always stay low below the smoke level.

The person using the fire extinguisher must only attempt to control a fire if it appears to be in a manageable state.

When a fire is large in volume, out of control and it appears that you have insufficient fire extinguishing capacity to control the fire, it should be considered "un-manageable".

If this is the case, try to confine the fire as much as possible by closing doors and quickly evacuate the building.

Portable fire extinguishers are intended to be a "first line of response" by persons possessing a basic understanding of personal safety and have a realistic view of a fire extinguishers capabilities.

A person should only use a fire extinguisher to control a fire if they are confident of their abilities to safely use the device and only if the fire is in a manageable state.

Attempting to fight an "un-manageable" fire wastes precious time needed to safely evacuate and places the user in danger.

Do Not Use If:

You have a serious medical condition such as Cardiac Problems or if you have Respiratory ailments like asthma, emphysema, and other respiratory conditions.

Do not use if you react negatively to stressful situations and are not confident in your ability to use a fire extinguisher.

If you are pregnant, you should not use a fire extinguisher.

SECTION 4

Questions

Questions:

1. What should you do first before using a fire extinguisher?
2. What does the acronym PASS represent when using a fire extinguisher?

SECTION 5

Fire Safety Final Points

Know your facility's Emergency Action Plan or (EAP) and be familiar with it.

Know the locations of critical items like fire extinguishers, alarm pulls, exits, telephones, and first aid kits.

Always identify all possible exits and emergency equipment.

Fire Prevention

The chances that a fire can occur reduced when you:

Maintain your work space in a condition that is free and clear of excessive combustible materials and make sure that all storage is maintained in a neat and orderly manner.

Regularly empty trash and never allow items like oily rags to accumulate.

Never use space heaters. Space heaters are typically prohibited by code and represent a serious safety hazard. Unattended space heaters in close proximity to combustible materials have been the cause of numerous serious fires in the United States.

Never use candles in the workplace or home. Unattended candles cause fires.

Take particular care when working with flammable and combustible liquids. Use and store flammable and combustible liquids in properly ventilated work spaces where all potential ignition sources have been eliminated. Keep containers with flammable and combustible liquids in approved flammable liquid lockers. The door to the locker should be closed and latched at all times when the locker is not in use.

Always be sure to use flammable or combustible liquids at work or at home in a well-ventilated space. Make sure that you are safely away from all forms of ignition including open flames, pilot lights, and electrical equipment.

Never re-fuel engines or motors when the equipment is running or hot.

Additional Warnings

When working with electricity and electrical equipment, be careful and make sure to use it responsibly.

Electrical motors should always be kept in a clean condition.

Utility bulbs should always be equipped with a protective cover.

Fuses and circuit breakers should never be misused.

Never install a fuse that is greater than the rating of the circuit.

Never force open a circuit breaker that trips.

SECTION 5

Fire Safety Final Points

Additional Warnings

Breakers trip for a reason. Contact your supervisor or maintenance technician so they can determine “why” a breaker is tripping and make the necessary repairs.

Do not disregard strange odors or evidence of smoke coming from an electrical appliance or wiring arrangement.

Open wiring or wiring that appears to be unsafe needs to be evaluated and serviced by a licensed electrician.

Extension cords should only be used in accordance with the manufacturer’s specification for temporary electrical power supply.

Never overload electrical outlets because an overloaded outlet can start a fire.

Safety Systems

Activate the building’s fire alarm as soon as a fire is discovered or specifically designate someone to call 911.

Notify the fire department of the situation. Give them as much information possible.

Know your facility’s emergency response plan. Once you report to your per-designated rendezvous point, stay there and never consider going back into a burning building.

When participating in an emergency evacuation, never leave the property on your own without being officially released.

Portable fire extinguishers are only to be used in the early stages of fire growth.

Know your building’s fire protection and life safety systems.

Never cover or tamper with smoke or heat detectors or hang items from fire sprinkler heads.

According to code, design, and OSHA require that at least eighteen inches of clearance be provided beneath each sprinkler head to ensure proper performance during a fire.

SUMMARY: Employees who know how to properly use a fire extinguisher are the first line of response during a fire emergency.

Remember to comply with your facility’s emergency action plan and always call for help first before attempting to control a fire.

The utilization of Best Practices along with consistent code compliance can help ensure a safe environment both a work and at home.

Live follow up Q & A is available for this training. Just call **1-800-454-2446** or visit our website to learn more.

QUIZ

Fire Extinguisher

Questions

Multiple Choice, 10 points

1. An example of two "Class B" fuels would be:

- ☐ Cardboard, newspapers ☐ Grease, paint thinner
☐ Lamp, hot plate

True/False, 10 points

2. An APW (water extinguisher) is safe to use on an electrical fire.

- ☐ True ☐ False

Multiple Choice, 10 points

3. Carbon Dioxide extinguishers are designed for which types of fuels?

- ☐ Class B and C. ☐ Class A and C
☐ Class A, B, and C ☐ Class A and B

Fill in the Blanks, 10 points

4. What does each letter for the acronym PASS stand for?

P _____
A _____
S _____
S _____

True/False, 10 points

5. As a general rule, you should not attempt to fight a fire if it is spreading rapidly.

- ☐ True ☐ False

QUIZ

Fire Extinguisher

Questions

True/False, 10 points

6. ABC fire extinguishers extinguish fire by cooling it down.

☐ True ☐ False

True/False, 10 points

7. Water will not extinguish most flammable liquid fires.

☐ True ☐ False

True/False, 10 points

8. You should always keep an exit or means of escape at your back when trying to fight a fire.

☐ True ☐ False

Multiple Choice, 10 points

9. The three elements of the fire triangle are:

- | | |
|---|--|
| ☐ Water, a heat source, and fire | ☐ Oxygen, fuel, and a heat source |
| ☐ Oxygen, water, and fuel | ☐ Fuel, oxygen, and earth |

Multiple Choice, 10 points

10. Do you know where the nearest fire extinguisher is in your work area?

☐ Yes

☐ No

Where is it located? _____



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