BELMATT

HEALTHCARE TRAINING

Fire Safety

Aims of the Course

- Inform Healthcare Professionals on how to identify fire hazards.
- Educate how to conduct a fire safety risk assessment.
- How to prevent a workplace fire and potential injuries from the fire.
- Ways to respond in the case of a fire as part of statutory training requirements.

Outcomes

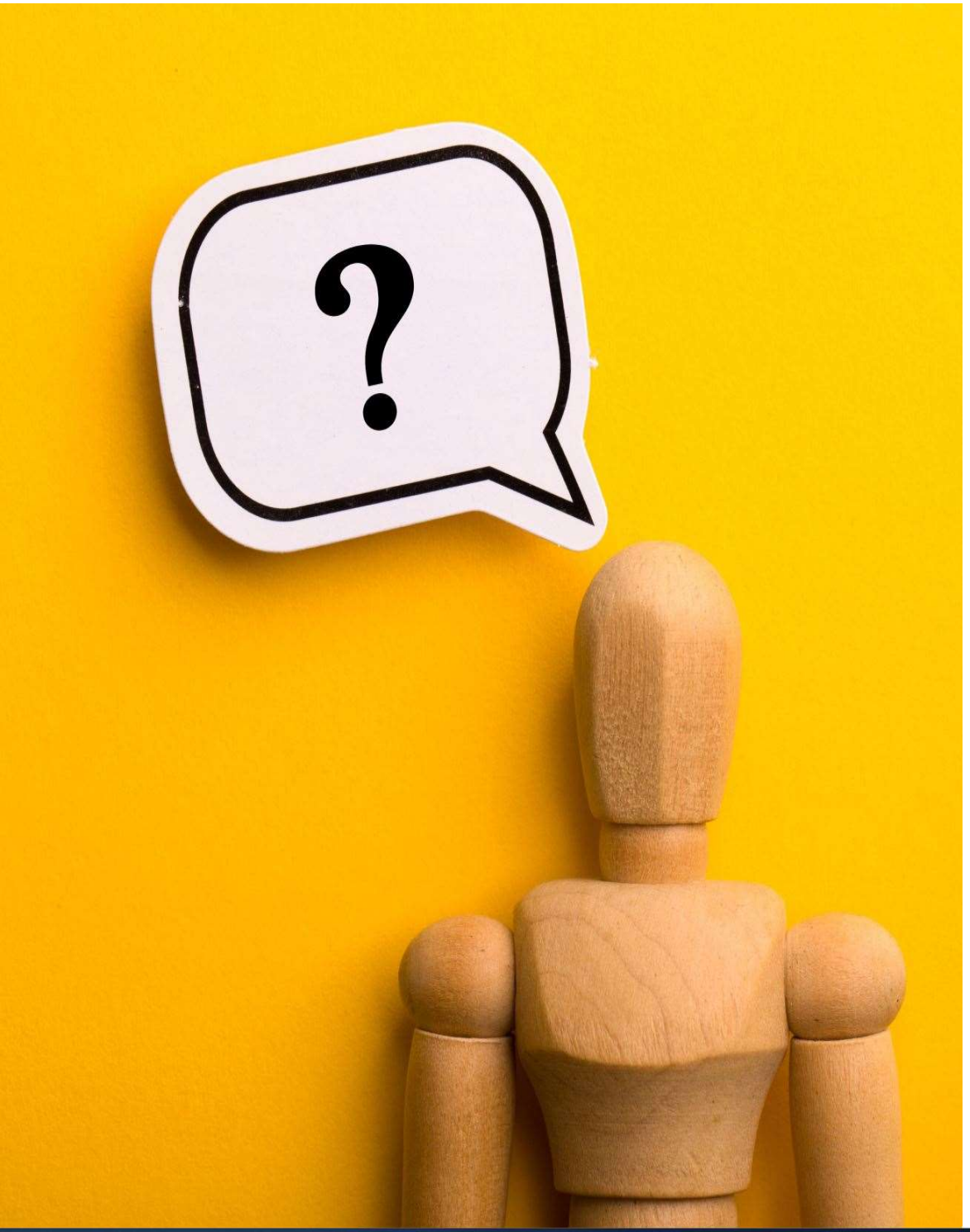
- Understand the characteristics of fire, smoke and toxic fumes.
- Know the fire hazards involved in the working environment.
- Be aware of the significant findings of relevant fire risk assessments
- Understand how to practice and promote fire prevention.

- Be aware of basic fire safety and local fire safety protocols including staff responsibilities during a fire incident
- Know the means of raising the fire alarm and the actions to take on hearing the fire alarm
- Know instinctively the right action to take if fire breaks out or smoke is detected.
- Be familiar with the different type of fire extinguishers, state their use and identify the safety precautions associated with their use.

- Understand the importance of being familiar with evacuation procedures and associated escape routes

Carrying out the assessment

- Identify the fire hazards.
- Identify people at risk.
- Evaluate, remove or reduce the risks.
- Record your findings, prepare an emergency plan and provide training.
- Review and update the fire risk assessment regularly.



You'll need to consider:

- Emergency routes and exits
- Fire detection and warning systems
- Fire fighting equipment
- The removal or safe storage of dangerous substances
- An emergency fire evacuation plan
- The needs of vulnerable people, for example the elderly, young children or those with disabilities
- Providing information to employees and other people on the premises
- Staff fire safety training

What are Hazards?

- Many substances found in the workplace can cause fires or explosions.
- These range from the obvious, e.g., flammable chemicals, petrol, cellulose paint thinners and welding gases, to the less obvious – engine oil, grease, packaging materials, dusts from wood, flour and sugar.
- It is important to be aware of the risks and to control or get rid of them to prevent accidents.

Identification of Fire Hazards

1. Many substances found in the workplace can cause fires or explosions.
2. These range from the obvious, e.g., flammable chemicals, petrol, cellulose paint thinners and welding gases, to the less obvious – engine oil, grease, packaging materials, dusts from wood, flour and sugar.
3. It is important to be aware of the risks and to control or get rid of them to prevent accidents.

The Law

The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) require employers to assess the risk of fires and explosions arising from work activities involving dangerous substances, and to eliminate or reduce these risks.

The Law

1. You also need to consider the presence of dangerous substances that can result in fires or explosions as part of your fire safety risk assessment.

<u>This is required under the following Acts</u>;

- Part 3 of the Fire (Scotland) Act
- Regulatory Reform (Fire Safety) Order 2005 (in England and Wales)

2. The Fire and Rescue Authorities deal with general fire safety matters in workplaces apart from on construction sites including shipbuilding

3. Enforcement responsibility for fire safety where dangerous substances are kept and used generally lies with HSE (or local authorities if they inspect the premises).

Definitions

- "**Class A fire**" - Involves ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.
- "**Class B fire**" - Involves flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.
- "**Class C fire**" – Involves energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.
- **"Class D fire"** – Fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium, and potassium.

The Fire Triangle

- The Fire Triangle is a simple model used to understand the ingredients necessary for most fires.

- Triangle illustrates a fire requires three elements:
  - Heat - to reach ignition temperature
  - Fuel - or combustible material to feed the fire
  - Oxygen - to sustain combustion

- Together, they produce the Chemical Reaction that is Fire.

- The fire is prevented or extinguished by removing anyone of the three elements. Keep fuel and ignition sources separate.

- A fire naturally occurs when the elements are combined in the right mixture.

Fuel Classifications

Fires are classified according to the type of fire that is burning. Basically what type of material is on fire, i.e. paper, grease, electrical equipment etc.

It's very important to understand the four different fire or fuel source classifications. Understanding this will allow you to correctly use the right fire extinguisher.

If you were to use the wrong type of fire extinguisher on the wrong class of fire, you may or may not be able to control or even extinguish the fire.

Fire Classes

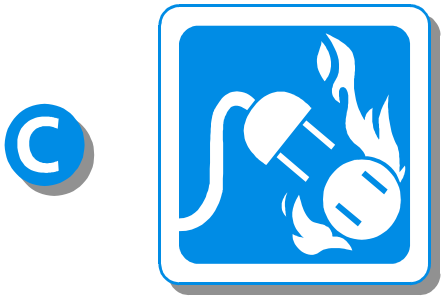
A Trash Wood Paper

- wood
- paper
- cloth
- etc.

B Liquids Grease

- gasoline
- oil
- grease
- other solvents

C Electrical Equipment



- computers
- fax machine
- other energized electrical equip.

COMBUSTIBLE METALS

- magnesium
- sodium
- potassium
- titanium
- other flammable metals

Fuel Classifications

Classes of Fires	Picture Symbol	Types of fuel	Mnemonic
		**Combustibles**: Wood, cloth, paper, plastic, trash.	Ash
		**Flammable Liquids**: Gasoline, oil, grease, tar, oil-based paint, flammable gases.	Barrel
		**Electrical Equipment:** Computers, fax machines, lab equipment	Current
		**Combustible Metals**: Magnesium, lithium, titanium	Dynamite
		**Cooking Media**: Cooking oils and fats	Kitchen

Fuel Classifications

- Most fire extinguishers will have a picture label telling you which types of fires 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 for Class A fires.

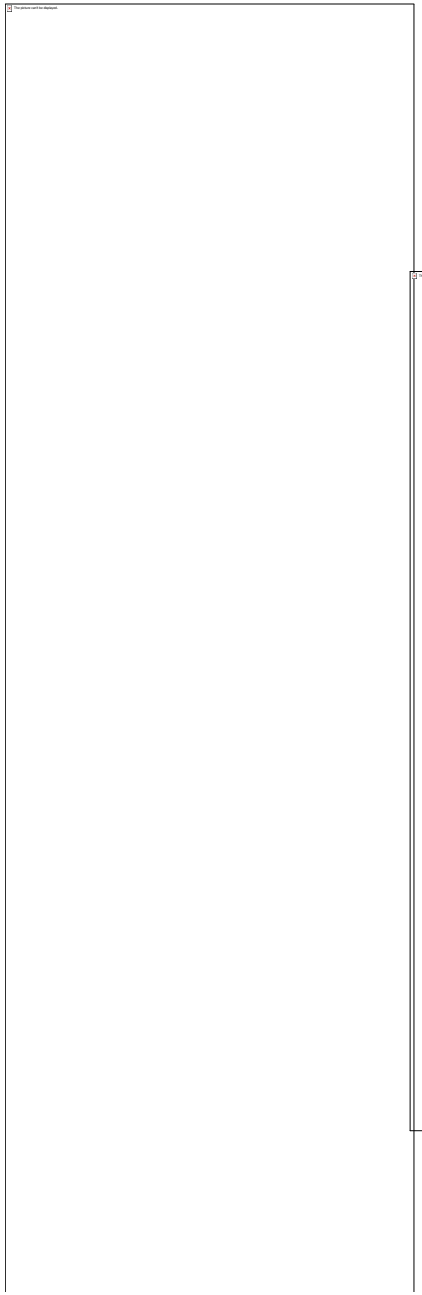
Types of Fire Extinguishers

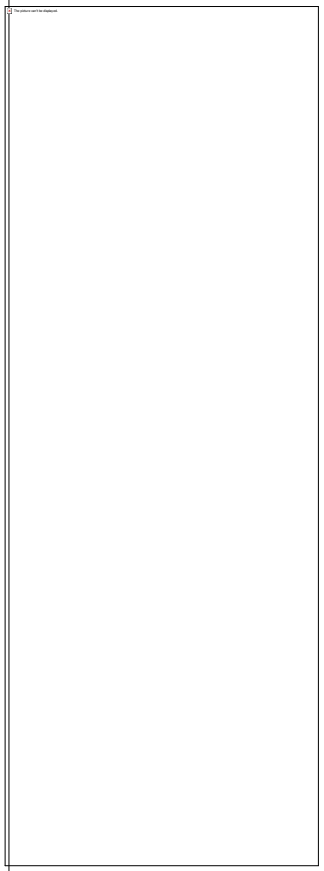
- Different types of fire extinguishers are designed to fight different classes of fires.

- The three most common types of fire extinguishers are:
    1. Water (Class A)
    2. Carbon Dioxide (CO_2) (Class BC)
    3. Dry Chemical (Class ABC, BC, DC)

    Less Common are Dry Powder (Class D) and Wet Chemical (Class K). If you feel as though your lab area may need either of these extinguishers, please contact the Safety Office

Types of Fire Extinguishers



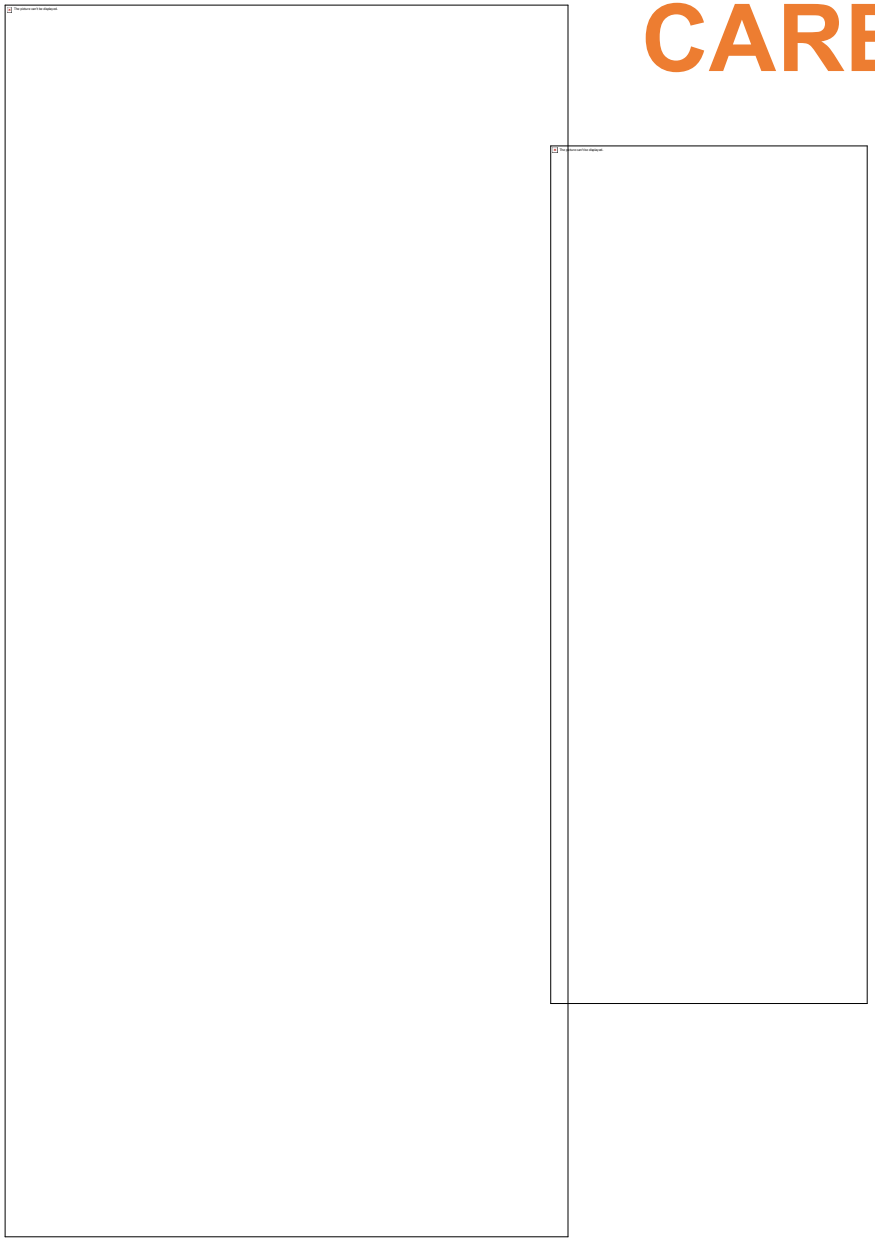


PRESSURIZED WATER

- **Class “A” fires only.**
- **2.5 gal. water at 150-175 psi *(up to 1 minute discharge time).***
- **Has pressure gauge to allow visual capacity check.**
- **30-40 ft. maximum effective range.**
- **Extinguishes by ***cooling*** burning material below the ignition point.**

  Taking away the ***heat* element from the fire.**

Types of Fire Extinguishers

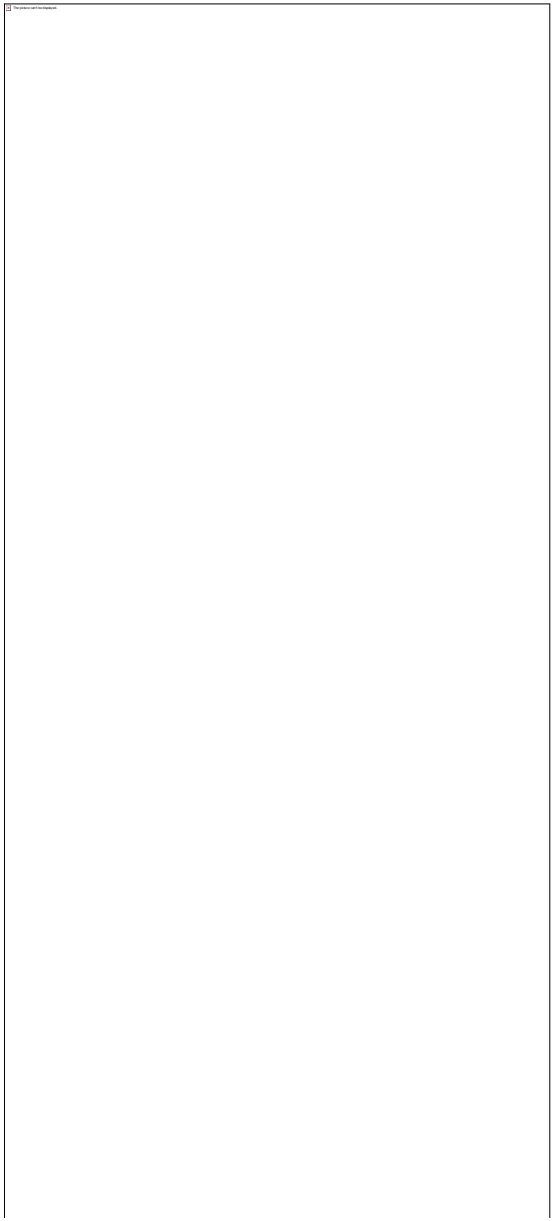


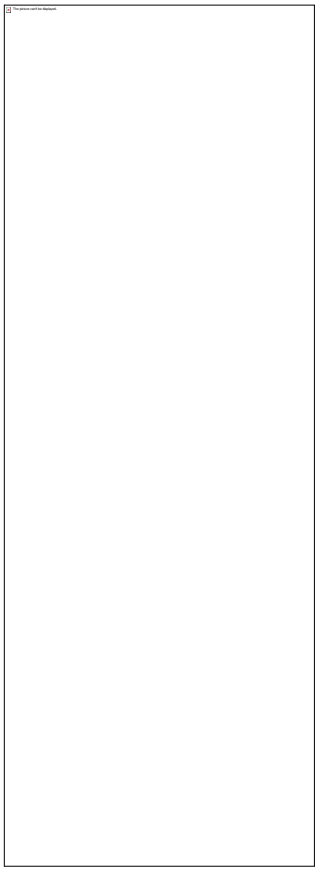
CARBON DIOXIDE (CO_2)

- **Class “B” or “C” fires.**
- **2.5-100 lb. of CO_2 gas at 150-200 psi *(8-30 seconds discharge time).***
- **Has ***NO*** pressure gauge--capacity verified by weight.**
- **3-8 ft. maximum effective range.**
- **Extinguishes by ***smothering*** burning materials. Displaces ***oxygen*****.**
- **Effectiveness ***decreases*** as temperature of burning material increases.**

Types of Fire Extinguishers

MULITPURPOSE DRY CHEMICAL





- **Class “A”, “B”, or “C” fires. On campus mostly Class ABC.**
- **2.5-20 lb. dry chemical *(ammonium phosphate)* pressurized to 50-200 psi by nitrogen gas *(8-25 seconds discharge time).***
- **Has pressure gauge to allow visual capacity check.**
- **5-20 ft. maximum effective range.**
- **Extinguishes by ***smothering*** burning materials. This separates the fuel from the oxygen in the air.**

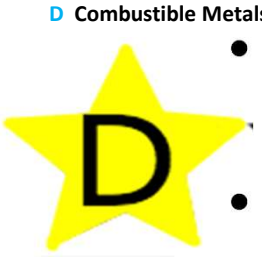
Types of Fire Extinguishers

WET CHEMICAL

- **Class “K” fires.**
- **1.5 gal. of stored pressure PRX wet chemical extinguishing agent *(40 sec. discharge time)*.**
- **10-12 ft. maximum effective range.**
- **Extinguishes by *cooling* and forming a foam blanket to prevent the fire from reigniting.**

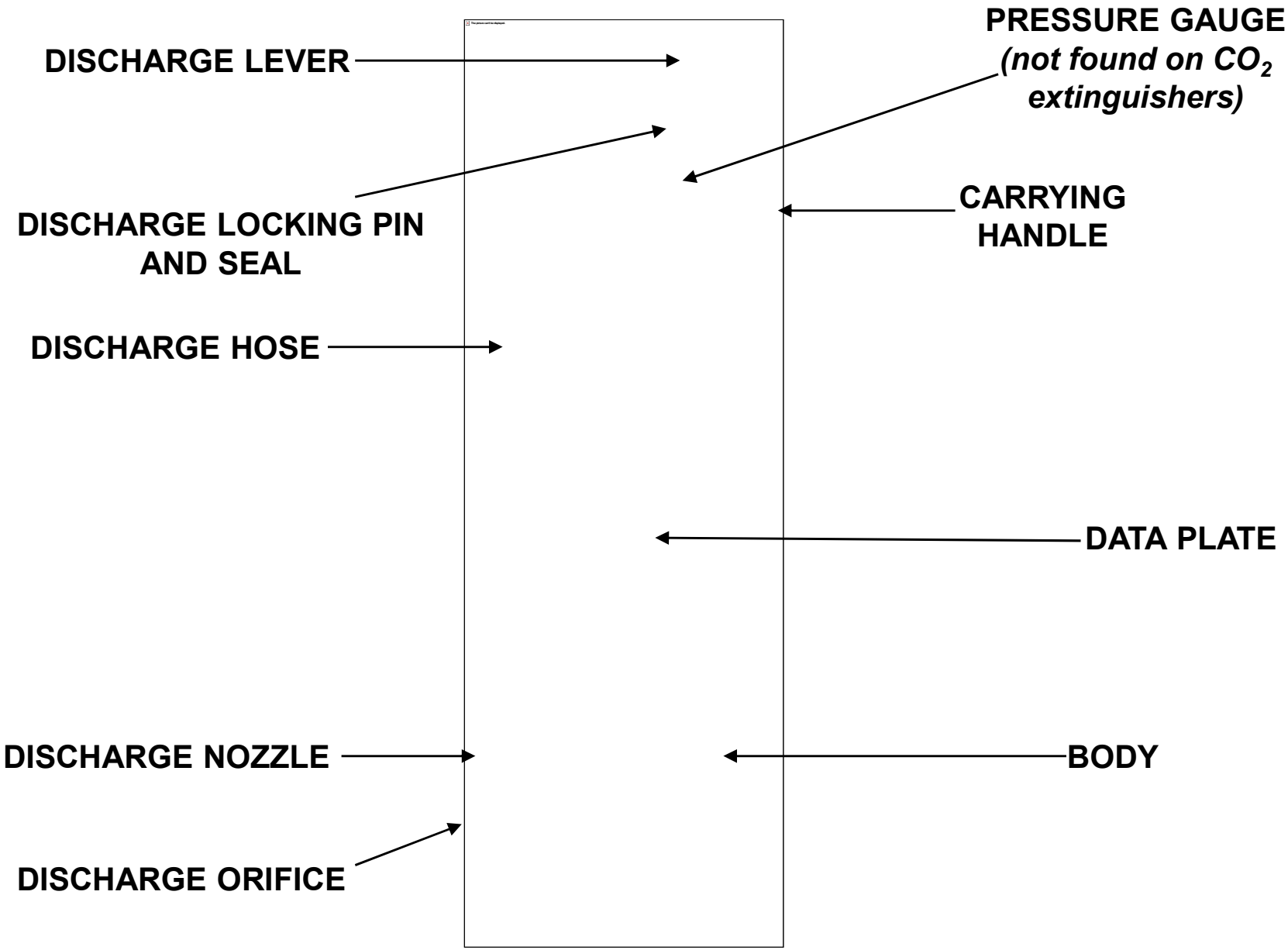
Types of Fire Extinguishers

DRY POWDER



- **Class “D” fires.**
- **Sodium chloride, copper, or graphite based. Some handle multiple types of metals, others will not.**
- **6-8 ft. maximum effective range. Low velocity nozzles or discharge wands apply agent gently to avoid disrupting finely divided burning materials.**
- **Extinguishes by *cooling and smothering.* Powder will act as a heat sink, while forming a crust that cuts off oxygen supply.**

Fire Extinguisher Anatomy



How to Use a Fire Extinguisher

Remember this easy acronym when using an extinguisher - **P.A.S.S.**

- ✓ **P**ull the pin.
- ✓ **A**im the nozzle.
- ✓ **S**queeze the handle.
- ✓ **S**weep side to side at the base of the fire.

How to Use a Fire Extinguisher

- Pull the ***Pin***…

- This will allow you to discharge the fire extinguisher. The pin prevents the fire extinguisher from being accidentally discharged by squeezing the handle.

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 without stopping the fire.

How to Use a Fire Extinguisher

- ***Squeeze*** the top handle.

- Squeezing the handle opens a valve that releases the pressurized extinguishing agent from the fire extinguisher.

How to Use a Fire Extinguisher

- ***Sweep*** from side to side.

  (until the fire is completely out)

- Start using the fire extinguisher from a safe distance (6-8 feet) then slowly move forward if possible.

- Once the fire is out, keep an eye on the area in case it reignites.

Inspection of Fire Extinguishers

- **Important!**
- Dates must be recorded, and all extinguishers tagged.

Travel Distance to Fire Extinguisher

- Travel distance to extinguisher: 75 ft
- For Class K (grease fire areas): 30 ft

Strategies to prevent fires

- Talking with patients and families/visitors about fire hazards related to smoking.
- Assessing smoking behaviours.
- Help all staff to be alert to any obstruction to fire exits/fire routes.
- Know where the fire extinguishers are located.
- Recognizing every fire drill as a learning/teaching opportunity.

What to do in the case of a fire

- Activate the nearest and/or safest fire alarm upon discovery of any fire, however small.
- Do not rely on automatic fire warning systems. Summon the fire brigade without delay by the usual method as automatic methods of transmission can fail.
- Only attempt to extinguish a fire if it is safe to do so. Guidance on the circumstances under which firefighting should be avoided or discontinued is included in staff fire safety training.
- Evacuate the building as soon as the alarm sounds. Employees should be familiar with the procedure through the staging of regular fire evacuation drills. Do not wait to conclude meetings or telephone calls or to collect belongings.
- Switch off any equipment which, if left unattended, may itself constitute a fire hazard.
- As you make your escape, close doors, particularly those designated as fire-resisting doors.
- Report to the pre-determined assembly points. Do not re-enter the building until the fire brigade officer in charge declares it is safe to.
- Fire wardens must check that each area of the building has been evacuated and report this to the nominated persons at the designated evacuation assembly points.

Firefighting Decision Criteria

- Know department emergency procedures and evacuation routes
- Know locations of extinguishers in your area and how to use them
- Always sound the alarm regardless of fire size
- Avoid smoky conditions
- Ensure area is evacuated
- Don't attempt to fight unless:
  - Alarm is sounded
  - Fire is small and contained
  - You have safe egress route (can be reached without exposure to fire)
  - Available extinguishers are rated for size and type of fire
- If in doubt, evacuate!

"DON'T ATTEMPT TO FIGHT UNLESS YOU ARE TRAINED"

Guidelines 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. Don't put yourself in danger too.

2. Call 999 or activate the building fire alarm. The fire alarm will notify the fire department and other building occupants.

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

Guidelines 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 fire 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.

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

As you evacuate the building, close the door (if there is one) behind you as you leave. This will help to slow down the spread of smoke and fire.

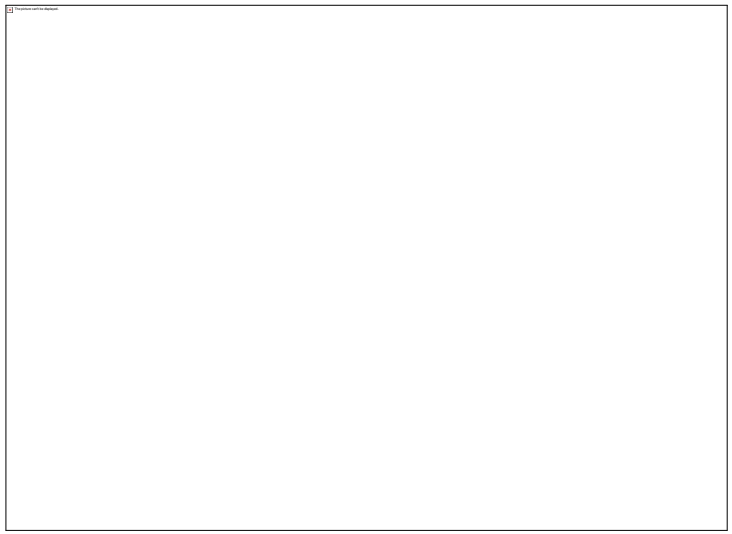
Guidelines for Fighting Fires

- The final rule is to always position yourself with an exit or means of escape at your back before you attempt to use a fire 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.

Never fight a fire if…

- **You don’t know what is burning.**
- **The fire appears too large to handle with one extinguisher**
- **The fire is spreading rapidly beyond the spot where it started**
- **You don’t have an adequate or appropriate fire extinguisher**
- **You might inhale toxic smoke**
- **Your instincts tell you not to**



Conclusion

Keys to success:

- Be familiar with the fire safety policy where you work.
- Awareness of fire exits and use/location of fire extinguishers.
- Identify and risk assess potential fire hazards.

Think Safety, Not Just Compliance!