

ACI

TRAINING & CONSULTANCY LTD

Fire Safety

TRAINING & CONSULTANCY LTD

Key Learning Outcomes

The learner will:

- Understand the characteristics of fire, smoke and toxic fumes
- Know the fire hazards 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 and describe the right action to take if fire breaks out or smoke is detected
- Be familiar with the different types 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.

Fire Safety

Regulatory Reform (Fire Safety) Order 2005

How do we deal with fire Safety?

1. Fire Prevention:

- Control Ignition, fuel and oxygen sources.
- Training, awareness etc.

2. Fire Warning:

- Detectors, alarms, fire panel, calling 999, escape routes, assembly point.

3. Firefighting:

- Use of fire extinguishers, hazard awareness.

Avoiding a Fire

Prevention is always better than cure and in most circumstances fire can be avoided. An appreciation of the danger areas can greatly contribute to fire prevention. Most healthcare premises contain the three classic danger areas:

- Kitchens
- Boiler Houses
- Laundry rooms

Dangerous Practices

The dangerous practices of everyone can cause major fire risks in the workplace. These include:

- Smoking
- Flammable materials
- Open fire doors

Risk Assessment

When evaluating the risk of a fire and its prevention in your premises, you should spend time developing long-term workable and effective strategies to reduce hazards and the risk of a fire starting. At its simplest this means separating flammable materials from ignition sources.

Elements of a fire risk Assessment

Means of Escape

Hazard Identification

Fire Detection Systems

General Problems

You should consider:

Housekeeping:

For all premises, good housekeeping will lower the chances of a fire starting, so the accumulation of combustible materials in premises should be monitored carefully. Good housekeeping is essential to reduce the chances of escape routes and fire doors being blocked or obstructed.

Laundries

Laundries, in both large and small premises, remain a high-risk area. They are often located in the basement, which means that any fire can affect the escape routes above.

Kitchen areas

In larger premises with extensive catering facilities the cooking range should have some form of automatic fire suppression system. In smaller premises a suitable fire extinguisher and fire blanket should always be provided. All deep fat cooking equipment should have a thermostatic temperature control and should never be left unattended.

Storage

Many of the materials found in your premises will be combustible. If your premises have inadequate or poorly managed storage areas, then the risk of fire is likely to be increased. Combustible materials are not just those generally regarded as highly combustible, such as polystyrene, but all materials that will readily catch fire.

Smoking:

Carelessly discarded cigarettes and other smoking materials are a major cause of fire. A cigarette can smoulder for several hours, especially when surrounded by combustible material. Many fires

are started several hours after the smoking materials have been emptied into waste bags and left for future disposal.

Particular hazards in corridors and stairways used as escape routes. Items that are a source of fuel, pose an ignition risk, or are combustible and likely to increase the fire loading or spread of fire, should not be located on any corridor or stairway or circulation space that will be used as an escape route.

Arson

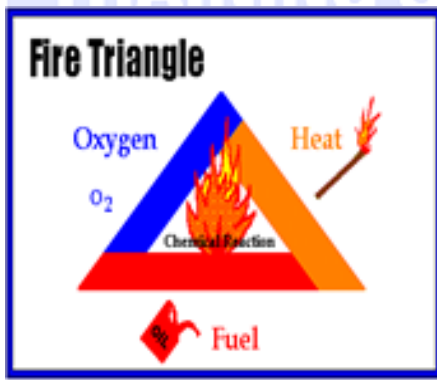
Recent studies indicate that, over 2,100 serious deliberately set fires, resulting in two deaths and 55 injuries, occur every week. All premises can be targeted either deliberately or just because they offer easy access.

Electrical Safety

Electrical equipment can be a significant cause of accidental fires in buildings. The main causes are:

- Overheating cables and equipment, e.g. due to overloading circuits, bunched or coiled cables or impaired cooling fans
- Incorrect installation or use of equipment
- Damaged or inadequate insulation on cables or wiring
- Combustible materials being placed too close to electrical equipment which may give off heat even when operating normally or may become hot due to a fault
- Arcing or sparking by electrical equipment
- Overloading of sockets
- Inadequate servicing and maintenance of equipment, e.g. electric blankets
- Overheating cables due to retention in a coil
- Lack of maintenance or testing.

Fire Triangle



In order to have fire we must have oxygen, heat, fuel.

This is called the **"Triangle of Fire"**.

All extinguishers work on the principle of removing one of these three key elements in the triangle.

Products of Combustion

The products of combustion include:

- Heat
- Smoke
- Light
- Gases that are Toxic / Noxious / Irritant
- Carbon Monoxide
- Carbon Dioxide
- Water Vapour
- Carbon Particles

Toxic Gases

The toxic gases that are produced during a fire include:

- Hydrogen cyanide: Fires involving polyurethane, foam and wool.
- Carbon dioxide: An asphyxiating gas resulting from complete combustion
- Hydrogen chloride: A by-product of P.V.C
- Carbon monoxide: Poisonous gas resulting from incomplete combustion.

Warning in Case of Fire

Fire Alarm Systems are there to give an audible warning throughout the building in the event of a fire. These should be tested at least once a week. In a hospital setting there are 2 different alarms, all staff should be aware of alarms and how to respond to them.

A Continuous Alarm – this usually means that the fire is in your area.

An Intermittent Alarm – this usually means that the fire is in the building but not in your area.

All staff should be familiar with the position of call points within the premises and whether or not they have a direct line to the fire service or whether an emergency call still needs to be made. In the event of alarm always ensure that the fire brigade have been called. When calling '999' ensure that you speak slowly and clearly giving your telephone number, full address and what type of assistance you require. Then be prepared to meet the arriving fire crew. Any alarm system is of no use if it cannot be heard in all parts of the building.



Break Glass Alarm Point



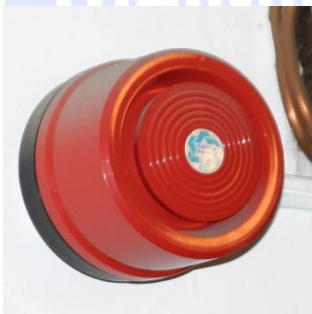
Smoke Alarm



Heat Detector



Remote Activators



Sounders

TRAINING & CONSULTANCY LTD



Control Panel



Fire Doors



Fire Exit Sign



Assembly Points



Fire Fighting Equipment

Firefighting Equipment

Fire extinguishers, hose reels and fire blankets are for use by trained people to tackle a fire in its early stages. With modern staffing levels the practicalities of using fire extinguishers are very limited. It is most important that all staff that are likely to use extinguishers have practical training in their use and feel confident to do so. In order to use extinguishers, we need to have a basic understanding of the nature of fire.

Fire Classification

The different symbols denote the different classification of fire.



Information on Fire Extinguishers

The information regarding its use will be located on the fire extinguisher and it should include:

- Plastic seal (over pin)
- Contents gauge
- Type of extinguisher
- Method of operation
- Class of fire suitable for use
- Service maintenance date

It can be very dangerous to use the wrong fire extinguisher. There are 6 main type of firefighting equipment; each fire extinguisher is red with colour coded labels to denote their contents:

Water Extinguisher

- Red body
- Suitable for use on **Class A fires**, wood and paper, etc.
- Not suitable for combustible liquids, cooking fats, etc.
- Not safe to use on fires involving electricity
- Extinguishes by cooling.



Foam Extinguisher

- Red body with cream label
- Suitable for **Class A and B fires**
- Not suitable for use on fires involving electricity
- Extinguishes by cooling and sealing the surface of a burning liquid.



Carbon Dioxide Extinguisher

- Red body with black label
- Best on **Class B fires** but can also be used on **Class C and electricity**
- Safe to use on fires involving electricity
- Extinguishes by reducing oxygen levels and cooling
- Not to be used in confined areas - can cause asphyxiation
- Do not hold the plastic horn or tube when discharging.



Powder Extinguisher

- Red body with blue label
- Best on **Class B** fires but safe to use on **any type of fire**
- Extinguishes by chemically interfering with the combustion
- Do not use in a confined area due to inhalation
- May cause serious damage to sensitive electrical equipment.



Wet Chemical Extinguisher

- Red body with a yellow label
- Specifically designed for use on cooking oil/fat fires
- Can be used on Class A fires
- Extinguishes by smothering and cooling (a fine nozzle creates a mist spray which reacts with the oil/fat)
- Do not use on electrical fires.



Fire Blanket

- Label is usually red or white
- For use on any type of fire but best on small contained **Class B fires**

- Extinguishes by smothering
- Normally used in kitchens
- One use only.

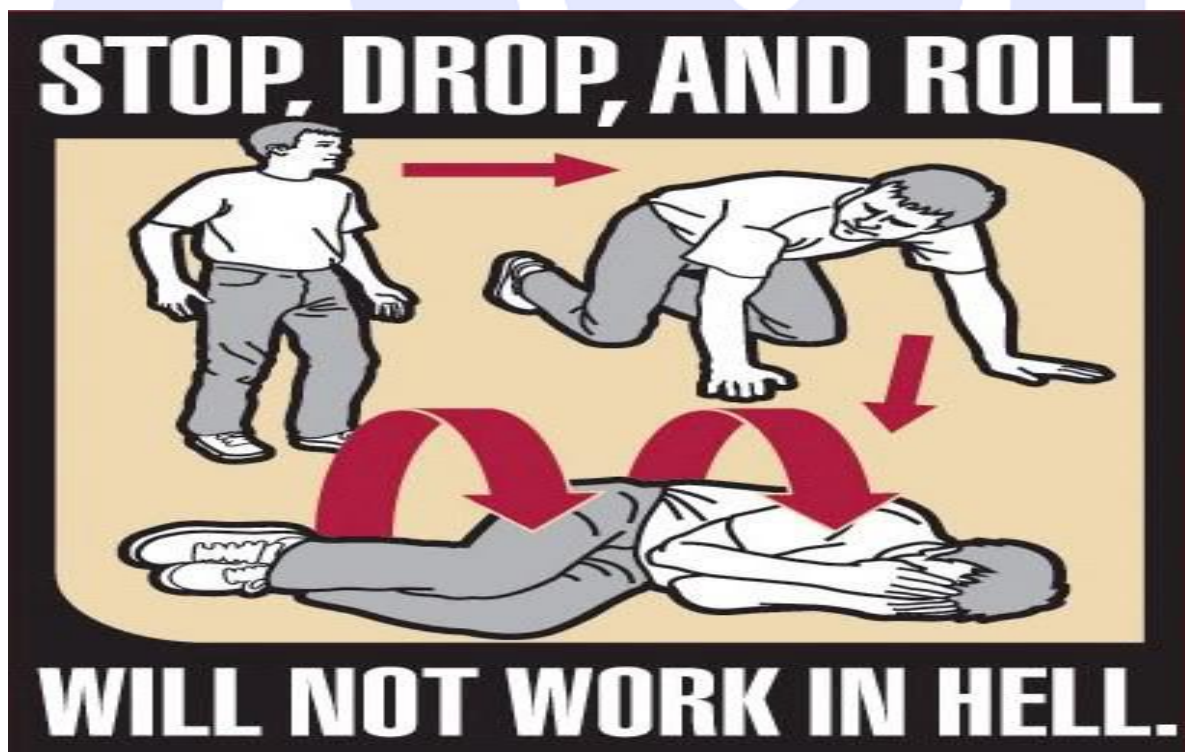


Extinguishers and blankets will usually be situated on a line of exit, near to danger points or near a door.

In some premises as well as fire extinguishers there may be fixed hose reels. These should be used in the same way as water extinguishers and may be automatic or may need to be manually turned on.

If a person's clothes catch fire...Flames travel upwards –

- **Stop** them running/moving about
- Get them to **Drop** if need be force them to the floor
- Covering the face for protection, get them to **Roll** about to extinguish the flames



Golden Rules

When tackling a fire with an extinguisher or hose reel, if it doesn't seem to be going out then close the doors on the fire and make an escape. When attacking a fire always keep the exit behind you so that you can make a rapid retreat should the need arise. Unless you feel confident and competent you should not tackle a fire – call the fire brigade!

No matter what physical fire precautions are incorporated into a building they are worthless without planned and practiced procedures to follow. You must know your fire instruction policy and understand it. If in doubt - ASK!

Some 'dos' and 'don'ts

DO:

- Know the fire plan, know your escape routes, location of call points and position of extinguishers
- Know the specific dangers and hazards at your premises
- Know what notices there are - what they say and what they mean

DON'T:

- Store combustible materials in unsuitable places such as boiler houses and corridors
- Enter a room unless you are sure it is safe to do so
- Tackle a fire unless you are confident to do so
- Use a lift as a means of escape
- NEVER go back to a fire

It is your duty and responsibility to yourself and others to be aware of the fire precautions and procedures at your place of work. All clients and staff must be aware of the evacuation procedure and not get complacent about it. **'COMPLACENCY KILLS'**

TRAINING & CONSULTANCY LTD

Means of Escape

A means of escape is the route a person will take from anywhere within a building to a place of safety. A place of safety is at ground level and does not include an enclosed yard. It can be via an internal staircase or an external fire escape. A means of escape is of no use if it is obstructed, therefore all routes to fire exits must be kept clear at all times. Any external fire escapes must also be maintained in a safe working order.

Securing the means of escape

- Any means of escape needs to be clearly marked and maintained
- Directional signs and notices are to show you the means of escape and should be supported by emergency lighting should the normal lighting fail. Emergency lighting must be tested regularly
- The escape route should have limited combustibility and should have push or panic bars on exit doors
- The fire door is the most effective piece in the fire safety jigsaw as it will hold back both heat and smoke and form a vital safety barrier between the fire and you. In 99% of fatal fires it is the smoke that kills, and not direct burns
- Regulations require that all fire doors, including those with magnetic closures should be closed after 11pm
- Final exit doors must always be kept clear and ready to open

Fire Drill and Evacuation

A fire drill is a practised rehearsal of a written fire plan so that in the event of a fire:

- Staff can act in a calm and orderly manner which will help and reassure the clients
- Staff who have been allocated specific duties can do these safely and efficiently
- If evacuation becomes necessary, it can be done in a safe and logical manner

Buildings can vary in many different ways - some are custom designed for care purposes but many are converted for such use and it is essential that you are aware of the places of safety and all the escape routes. This will assist you in the way you go about moving clients/patients to a place of safety. The place of safety need not be outdoors but it must have at least two doors between yourself and the fire. It is also preferable that this room has a final exit route to the exterior of the building.

With modern fire detection equipment, a fire will normally be detected in its early stages and a total evacuation will seldom be needed. A fire drill is designed to prepare everybody to act swiftly in any alarm. For this reason, fire drills should be varied to avoid complacency. For example, at least one exit should be blocked for each drill.

A fire drill should be designed to simulate a real situation and should include:

- How to operate break glass points and their position within the building
- Demonstration of what information can be gained from the main fire alarm panel e.g. location of the fire. (Remember - in the event of a real fire do not reset the fire panel - this is a job for the fire brigade who may need the information displayed on it). If possible it may be an advantage for staff to assemble at the fire alarm panel to receive instructions from a senior member of staff before any evacuation begins
- How to alert the fire brigade and what information should be given. Also, remembering to meet the fire brigade and relay important information to them

- Using the correct method of opening doors if there is any suspicion of fire behind them i.e. - listen for fire, feel both the door and the handle using the back of your hand to see if they are hot, if any sign of heat and fire then do not enter but take an alternative exit route
- Ensuring that all fire doors are closed as you pass through them
- Taking a roll call to enable everyone to be accounted for, and never allow anyone to go back into the building

Fire drills also enable staff to become aware of problems associated with fire exits before they are needed in an emergency - common hazards include obstacles being stored in the way of fire doors. Fire drills also test the efficiency of exit routes.

Risk and Evacuation Assessment

A fire drill should help you to practise your ability to make a quick assessment of a situation so that you will be able to identify who need to be moved first. To do this you will need to take into account several factors:

- Their physical condition
- Whether they are asleep or awake
- What medication they may be on

Methods of Moving Clients/Patients

Whilst some people may be able to move unassisted, inevitably many others will require a great deal of assistance. For this reason, the different methods of moving people should be practised. Not only to help you learn the techniques but to help you assess your own physical capabilities.

However, you must take into account that on occasions a patient's room may be the safest place and it may not be necessary to move them.

On discovery of a fire

No matter how small, on finding a fire the employee should:

- Raise the alarm
- Call the Fire Service.
- Close the fire doors
- Evacuate the building by the nearest available escape route
- Do not use the lifts
- Proceed to the assembly point
- Ensure all staff, patients and visitors have be accounted for

When Evacuating

REMEMBER:

- To close doors / windows
- Tell people to leave coats / bags
- Do not complete simple tasks
- Terminate all phone calls
- Assist in the evacuation of Visitors, Contractors and Temporary staff
- To report to the assembly point

Regulatory Reform (fire safety) Order 2005

When determining whether your premises have adequate escape routes, you need to consider several factors, including:

- The type, number and dependency of people using the premises
- Assisted means of escape
- The evacuation strategy
- Escape time and travel distance
- The age and construction of the premises
- The number of escape routes and exits
- The management of escape
- Emergency evacuation of persons with mobility impairment.

Evacuation Strategy

In residential care premises, typical evacuation strategies are likely to involve one or more of the following arrangements:

- Single stage evacuation
- Progressive horizontal evacuation
- Delayed evacuation

Single Stage Evacuation

This strategy is appropriate for patients and others who fall predominantly into the 'independent' category, where it may reasonably be expected that all people in the building are able to (and will) evacuate immediately from the premises to a place of total safety without assistance.

Progressive Horizontal Evacuation

This strategy is likely to be necessary where the residents are dependent on staff to assist with their escape.

It works on the principle of moving residents from an area affected by fire, through a fire resisting barrier to an adjoining fire protected area on the same level, where they can wait in a place of safety whilst the fire is dealt with, or await further evacuation down a protected route to total safety.

Delayed Evacuation

Exceptionally, in some situations it may not be desirable or practical to evacuate some patients immediately (e.g. because of medical conditions or treatments). In these circumstances, it may be appropriate to allow them to remain in their rooms whilst the fire is dealt with and the danger has passed, or to allow for the additional time necessary to prepare them for evacuation.

In such circumstances, it will be necessary to provide enhanced levels of structural fire protection to the individual bedroom. However, where this strategy has been adopted, a suitable evacuation plan will still be required.

Hospital Fire Safety – Recap

- Patients will panic as they will need help
- Particular concern regarding evacuation in theatre, recovery and ITU/HDU due to the equipment needed
- It is not only patients that need consideration but visitors and relatives
- Hospital can be different types of buildings, such as old buildings or tower blocks
- Closing Fire doors in corridors create small areas or compartments
- High rise buildings are difficult to evacuate

It is only in extreme circumstances that patients will need to be evacuated to the outside of a building, the general principles are contained in the policy and principles file code document that states that:

The occupants, including patients, assisted as appropriate, should be able to turn their back on the fire wherever it occurs and travel away from it directly through the circulation spaces and stairways to a place of safety, first within the premises and then, if necessary, to one outside of the building.

- Contact the switch board using the emergency number, reporting exactly what you have seen and where.
- Making sure the emergency services arrive quickly is vitally important
- You must reassure your patients and tell them what is happening
- If you are not in immediate danger of the fire you will hear the intermittent alarm.
- This is the stand by signal and it is telling you that there is a fire in another part of the hospital you must begin pre-evacuation procedures
- The senior member of staff will be considering the possibility of evacuation and prioritising the patients depending on their medical need
- Keep all windows and doors closed
- All medical equipment must be prepared so it can be moved without delay if necessary
- Security and porters will be preventing people from entering the building
- In the main area of the fire the alarm will be ringing constantly
- In most buildings, this would be a signal to leave the building

- But not in a hospital this is not the case. In a hospital, the technique for evacuation is to move the patient to a place of relative safety in the same area.
- This is known as Progressive Horizontal Evacuation.
- The concept of Progressive Horizontal Evacuation is to move patients away from the area of the fire in stages. This will initially mean moving them to a sub compartment or adjoining compartment
- Once the patients and staff have been moved out of the immediate area of the fire and the doors are closed they are now in an area that offers them at least 20 minutes of protection
- If the fire continues to grow then the patients are moved progressively away from the scene of the fire
- Once the patients have been moved away from the area of the fire they then can be moved to a prearranged place of safety
- Planning prior to evacuation is vital to ensure equipment is taken to or available at the place of safety.
- The majority of fire occur between 6pm and 6am, when fewer staff are on duty and it is like to grow undiscovered or until the automatic fire detection system activates.
- In this situation, you will have to make all of these decision very quickly.
- Who do you evacuate first? Normally the person in immediate danger of the fire.
- You can't evacuate everyone at once so the safest place for them is on the ground away from the fire
- Patients who can mobilises themselves should be lead out
- With Horizontal Evacuation, most patients can be moved in their beds or blankets can be used.
- Quick Evac stretchers or Ski Pads/Sheets, wheelchairs or ambient chair are normally positioned by the stairway in case of vertical evacuation
- If you have to move a patient in a bed you need to lower it to ensure the equipment will clear the doorway.
- With the Quick Evac Stretcher, the patient is strapped in with a harness. It is on wheels so it can be pulled and has hand holds so it can be carried
- The Ski Sheet is fixed permanently to the mattress and to use it you must first release the straps from the pockets. The pass them across the bed and connect them up, tighten the traps and slide the patient onto the ground then pull them to safety
- The Ski Pad is very much like the Ski Sheet but first the patient is lowered in to the ground and then strapped securely with the straps
- Both Ski Sheet and Pad can be used down the stairs
- If evacuation equipment is not available, then bedding can be used.
- If you discover a fire your main concern must be to the safety of the patients and other people in the area
- The 2 main problems with fire is the smoke and panic
- If you find yourself in a smoke-filled area, try to keep as low to the ground as possible
- The most effective way to ensure what to do is to attend fire training