Introduction

- **Fire marshalls** have a **role** and **duties** within **The Regulatory Reform (Fire Safety) Order 2005**
- Helping to make the workplace a **safer environment** in the event of an **emergency**

The Regulatory Reform (Fire Safety) Order 2005

- In **England** and **Wales**:
- All employers, owners, landlords or occupiers of business or other non-domestic premises are responsible for fire safety and are known as the 'responsible person'
- Similar rules apply in **Scotland** and **Northern Ireland** under the:
    - Fire (Scotland) Act 2005
    - The Fire Safety Regulations (Northern Ireland) 2010

- The **Regulatory Reform (Fire Safety) order 2005** states:
    - *The responsible person must ensure that employees are provided with adequate safety training*
        - At the time when they are **first employed**
        - On being **exposed** to **new** or **increased** risks

- **New or increased risks are:**
    - Change of responsibilities
    - Introduction of new equipment
    - Introduction of new technology
    - New systems of work

- **Suitable** and **sufficient***instruction* and *training* on precautions and actions:
    - Should be repeated periodically where appropriate
    - Should be adapted to take account of new or changed risks
    - Provided in an appropriate manner to the risk identified
    - Taking place during working hours

- **The 'responsible person' must also:**
    - Carry out and regularly review a fire risk assessment
    - Tell staff and/or their representatives about the risks identified
    - Put in place, and maintain, adequate and appropriate fire safety measures
    - Plan for an emergency

Premises

- **Non-domestic premises are:**
  - Workplaces and commercial premises
  - Premises the public have access to
  - The common parts of multi-occupied residential buildings
- **Shared premises:**
  - In shared premises there may be more than one responsible person
  - Fire safety plans need to be co-ordinated
  - For common or shared areas, the responsible person is the landlord, freeholder or managing agent

Death and Injury

- **In 2010-11 Fire and Rescue Services attended 287,000 fires in Britain**
  - 388 people lost their lives
  - The majority of these people died where they lived (dwelling fires)
  - Fire fatality rates are higher for people aged over 80 and for males
  - 11,100 people were injured in fires

- The **most common cause of death** is being overcome by gas or smoke
- 132 people died this way, accounting for 34% of all deaths
- A further 69 (18%) deaths were attributed jointly to both burns and being overcome by gas or smoke
- 95 (24%) were due to burns alone

Common Causes of Fires

Arson

- This is the malicious act of setting fire to something with the intent to cause damage or harm
- Arson is the **largest single cause** of **major fires** in the UK
- Arson related fires lead to loss of life, injury and significant economic loss and environmental damage

- **In the UK during 2010-2011:**
  - Around 14% of all dwelling fires were deliberate
  - Or suspected to be deliberately started
  - There were 6200 deliberate fires in dwellings
  - 7300 in other buildings
- As a result:
  - 72 people died and 1700 people were injured

- Some **buildings** are **more prone** to deliberate ignition than others

- **Of all arson attacks in 2010-11:**
  - 51% were in hotels, hostels and catering
  - 50% in private garages and sheds
  - 36% in recreational and other cultural services premises
  - And 34% in schools

Deliberate Omission

- Fires also start when something that **should have been done** hasn't been done, e.g.:
  - **Poor housekeeping:**
    - Leading to excessive storage of combustible materials or the accumulation of waste

Electrical Fires

- **Misuse of electrical equipment, e.g.:**
  - Overloading sockets or adaptors
  - Obstructing vents on electrical equipment
  - Using equipment for purposes for which it was not designed
  - Using faulty or defective equipment
  - Leaving appliances switched on when not in use
- This is consistently the **main cause** of accidental dwelling fires
- In the year 2010-2011 14,700 fires were caused through misuse of equipment

Fires Caused By Smoking

- Smoking in **unauthorised areas**
- **Careless disposal** of smoking materials

- Cigarettes, cigars or pipe tobacco are the most frequent **source of ignition** causing accidental dwelling fire deaths
- Accounting for **over a third** of all accidental dwelling fire deaths in 2010-11
- Since 2000-01, deaths from smoking materials have **reduced**
  - A downward trend for most of the decade

Cooking

- Misuse of cooking appliances such as toasters and microwave ovens
- Fires started by **cooking appliances** were responsible for about 10% of all accidental dwelling fire deaths (**28 deaths**)
- Only 1 person was killed for every 1,000 fires started in cooking appliances
- This could reflect the relatively minor nature of many cooking-related fires and the fact that many cooking fires occur when victims are alert at the time of the fire

EQUIPMENT AND OTHER SAFETY FEATURES

Fire Alarms

- A **fire alarm** alerts everyone in the event of a fire
- **It may be activated:**
  - Manually via the red fire alarm **call points**
  - Automatically via heat or smoke **detectors**
- **You must know:**
  - The sound of the fire alarm
  - The location of the call points

Notices and Signs

- **Fire instruction notices** are usually positioned adjacent to manual fire alarm call points
- They detail information about what to do when the alarm sounds
- **Fire signs** are found throughout a building
- They show the way to emergency exits
- Highlight fire safety features
  - Acting as a reminder to keep fire doors closed

Fire Fighting Equipment

- **Fire fighting equipment** enables you to fight a fire
- If necessary and safe to do so
- It is your duty to know **the location** of **all** fire fighting equipment in your working area

Emergency Lighting

- **The Regulatory Reform (Fire Safety) Order 2005:**
  - **Emergency lighting** lights up the risk areas and escape corridors in the event of a power failure
  - Keeping people safe in an emergency
  - It needs to be sufficiently bright, illuminated for enough time, and the light sources so positioned that the occupants of a building can be evacuated safely in an emergency

- **You will find emergency lighting:**
  - Along escape routes
  - At every change in direction
  - Adjacent to any step or trip hazard
  - Over every flight of stairs so each tread receives direct light

- Close to fire fighting equipment and call points
- Close to any first aid points
- Outside every final exit

Fire Resistant Doors

- **Contain** the fire and smoke for **at least** 30 minutes
- They may be fitted either with:
  - **Self-closing devices,** *or*
  - **Automatic hold open devices**, linked in to the fire alarm
- **They must never be wedged or propped open**

IN CASE OF FIRE . . .
WHAT TO DO

Discovering a Fire

- **The instructions for <u>discovering</u> a fire are:**
  - Raise the alarm by shouting
  - Remove anyone in immediate danger and close the door
  - Break the glass of the nearest fire alarm call point
  - Dial 999 and alert the Fire Service to the situation
  - Fight the fire **only if it is safe to do so**

- **The instructions for the <u>rest of the staff</u> when they hear the fire alarm are:**
  - Leave the building
  - Close all doors and windows on route
  - Escort all clients/patients and visitors (those not in the waiting area) from the building
  - Reception staff should clear the waiting area
  - Go to the assembly point

Fire Service Arrival

- **The Fire Service will ask the following when they arrive:**
  - Is everyone accounted for?
  - Where is the fire?
  - What is the nature of the fire?
  - How do we get to the fire (are there any locked doors etc.)?
  - Are there any hazards in the vicinity of the fire?

Fire Extinguishers

- **The most common fire extinguishers are:**
  1. **Water** for wood, paper, textiles and solid materials (red cylinder)

2. **Carbon Dioxide (CO2)** for electrical appliance fires (red with **black markings/fittings**)
3. **Dry Powder** for liquid fuel and electrical appliance fires (red with blue markings/fittings)
4. **Foam** for liquid fuel fires (red with cream marking)

Fire Blankets

- For all small fires and fires involving pan, clothing

- Extinguishers and fire blankets are all **portable equipment**

- Some areas may also have **water hose-reels**
  - These are **fixed equipment**
  - They may be **automatic** or require **manual operation**

Fire Extinguishers and Labels

- Most fire extinguishers are RED
  - *With a coloured label*
- You may come across a fire extinguisher that is not red
- If so, the colour of the actual extinguisher tells you the type it is
  - *As the colour will be the same as a 'label' on a red extinguisher*

Water Extinguishers

- These are for fires involving SOLIDS
- **Water extinguishers** work by *cooling burning material* so there is not enough heat for burning to continue
- **Water** is effective on fires involving:
- *Combustible solids like wood, paper and textiles*

- Water extinguishers SHOULD NOT be used when:
  - There may be **electricity** present
    - *Water is a 'conductor' of electricity*
    - *There will be a risk of electrocution*
  - The fire involves **fat** or **flammable liquids**
    - *Water can rapidly turn into steam and cause a huge fireball*
    - *Oil and fat float on water (spreading the fire)*

Carbon Dioxide CO2 Extinguishers

- These are for fires involving ELECTRICAL EQUIPMENT
- As they do not damage the equipment or 'conduct' electricity
- They work by excluding oxygen

- They can also be used on fires involving FLAMMABLE LIQUIDS that are CONTAINED
- *They discharge under **high pressure**, the fire could spread if the flammable liquid is not contained*

- Because they discharge under high pressure:
  - DO NOT use them in a confined space
    - *E.g. a walk-in cupboard*
- When CO2 is released it increases in volume (*500 times*)
- If used in a confined space, the CO2 replaces **all** the oxygen available
  - *Making it impossible for the user to breathe*

- Carbon Dioxide has no residual cooling effect
  - *If the fire is not completely extinguished there is a danger of it re-igniting*
  - *Check that any fire is completely extinguished before the area is made safe*
- Always be careful when holding a CO2 extinguisher
  - *The nozzle is extremely cold whilst being discharged*

Spray Foam Extinguishers

- These are for fires involving SOLIDS or LIQUIDS
- They *cool* the burning material
  - *Sealing the vapours and excluding oxygen from the fire*
- Foam is highly effective for fires involving:
  - *Fat* or *flammable* liquids
  - Combustible *solids* (e.g. wood, paper and textile)

- DO NOT use spray foam extinguishers:
  - When *electricity* is present
    - **Foam** is *water based* so there is a danger of electrocution

Dry Powder Extinguishers

- These are for fires involving ELECTRICAL HAZARDS, FLAMMABLE LIQUIDS and GASES
- They contain a chemical that *reacts* with the fire to **exclude***oxygen*
- A very versatile extinguisher

- Dry Powder has no 'cooling effect'
- If a fire is not **completely** extinguished it could re-ignite
- If using this type of extinguisher ensure that the fire is *completely extinguished*
- An area **cannot be considered safe** until then

HOW TO USE EQUIPMENT IN AN EMERGENCY

Water Extinguishers

- **Before attempting** to fight a fire with a fire extinguisher it is important to **check** that:
  - It is fully charged
  - The safety pin is not bent
- Ensure you remain a **safe distance** from the fire
- Remove the safety pin
  - This will break the tamper seal

- **Where to aim the fire extinguisher hose:**

- Fires spreading **horizontally**:
  - Aim the hose at the base of the fire, moving the jet across the area of the fire

- Fire spreading **vertically**:
  - Aim the hose at the base of the fire, slowly moving the jet upwards following the direction of the fire

- **Squeeze** the lever **slowly** to begin discharging the extinguisher
- As the fire starts to diminish carefully move closer to it
- Ensure **all** the fire has been **extinguished**
- Try to focus on any hot spots that may re-ignite

CO2 Extinguishers

- **Before attempting** to fight a fire check that it is fully charged and that the safety pin is not bent
- Ensure you remain a **safe distance** from the fire and remove the safety pin
- This will break the tamper seal
- **Do not hold the horn**as it becomes extremely cold during use and can lead to severe frost burns

- **Aiming the extinguisher:**

- Flammable liquids:
  - Aim the horn at the **base of the fire** and move across the area

- Electrical equipment:

    - **Switch off the power** (if safe to do so) and then direct the hose straight at the fire

- **Squeeze the lever slowly** to begin discharging the extinguisher
- As the fire starts to diminish carefully move closer to it
- Ensure **all the fire** has been extinguished
- Re-ignition is possible when a CO2 extinguisher has been used

Dry Powder Extinguishers

- **Before attempting** to fight a fire check that it is fully charged and that the safety pin is not bent
- Ensure you remain a **safe distance** from the fire and remove the safety pin
- This will break the tamper seal

- **Where to aim the fire extinguisher hose:**

- **Solid Materials:**
    - Aim the hose at **the base of the flames**, moving across the area of the fire

- **Spilled liquids:**
    - Aim the hose at the **near edge of the fire** and with a rapid sweeping motion, drive the fire towards the far edge until all the flames have been extinguished

- **Flowing liquid:**
    - Direct the hose at **the base of the fire** and sweep upwards until the flames have been extinguished

- **Electrical equipment:**
    - **Switch off the power** (if safe to do so) and then direct the hose straight at the fire

Spray Foam Extinguishers

- **Before attempting** to fight a fire check that it is fully charged and that the safety pin is not bent
- Ensure you remain a **safe distance** from the fire
- Remove the safety pin
    - This will break the tamper seal

- **Where to aim the fire extinguisher hose:**

- **Flammable liquids:**

  - Aim the hose at a **vertical surface near** the fire, **do not spray directly** at the fire as this could cause the fire to be pushed and spread to surrounding areas.
  - Foam extinguishers allow a build-up of foam across the surface of the fire causing it to be smothered

- **Solid combustibles:**
  - Aim the hose at **the base of the fire**, moving across the area of the fire

- **Squeeze the lever slowly** to begin discharging the extinguisher
- As the fire starts to diminish carefully move closer to it
- Ensure **all the fire** has been extinguished
- The foam creates a blanket over the fire and helps to prevent re-ignition

Fire Blankets

- **Turn off the heat source** if it is safe to do so
- Do not attempt to move the pan
- **Pull the tapes** to release the blanket from its container
- Hold the blanket **in a shield position** and if possible wrap the blanket around your hands for protection
- Place the blanket **gently** over the pan/container to **smother** the fire
- **Leave the pan to cool completely** – do not attempt to uncover until it is completely cool

HUMAN BEHAVIOUR – BASED ON RESEARCH

Type of Behaviours

- When there is a fire, people assume a **wide range** of **possible behaviours**, depending on:
  - Role and training
  - **Perception** of the developing fire situation (which may differ from the facts)
- As the perceived situation worsens, the range of viable behaviours reduces

- **People may:**
  - Continue working
  - Go to collect belongings
  - Attempt to fight the fire
  - Seek to warn others
  - Re-join family groups
  - Rescue / assist others
  - Seek refuge
  - Escape

Behaviour Factors

- **Behaviours** may depend on **many factors**, for example:
  - A **defined role** within the building population
  - The **influence** of **training**
  - **Familiarity** with the building
  - Age
  - Gender
  - Disabilities

- Type of Behaviours - Smoke
  - People may **move** (or continue to move) through smoke
  - They may **choose an alternative** action / route leading away from the smoke
  - As visibility decreases, people will move more slowly

- Type of Behaviours – Exit Doors
  - **Exit choices** made by different people mean that all doors are not used by the optimum number of people to minimise the evacuation time
  - People will not necessarily choose their **nearest exit** either
  - People tend to stick to **familiar routes**

THE ROLE OF A FIRE WARDEN

- **A fire warden has the following roles:**
  - A **day-to-day** role
  - A roll for when the **fire alarm sounds**
  - Additional duties as **determined** by the responsible person

Daily Role – Risk Assessment

- **To keep an eye on:**
  - *The general fire safety of the area allocated*
  - *Corridors and walkways to ensure combustible materials are not stored there*
- **Monitor escape routes** to see they are kept free of obstructions
- **Check that fire doors** are not tied, propped or wedged open where they should not be
- **Check that final exit doors** are not obstructed
- **Check that extinguishers** are where they should be and no obvious misuse or defect has occurred

Fire Alarm Sounding Role

- **Specific duties will depend on**:
  - Whether there are other fire marshalls
  - This will depend on:
  - How the building is laid out
  - How big it is
  - Whether the building has more than one floor

- Fire Alarm Sounding Role
- **General duties:**
  - Put on any **high-visibility clothing** provided for the role
  - Sweep through **allocated area**
  - Turning off equipment and closing doors/windows in passing but not delaying their own escape unduly
  - While encouraging people to leave via the nearest fire escape route
  - The fire warden should normally be the last person off their floor/area

- General Evacuation Duties (Cont'd)
  - Checking all **accessible rooms** including toilets and offices to make sure people are beginning their evacuation
  - Checking any **refuge in their area** in case someone is waiting for assistance to evacuate
  - **Reporting to the person in charge** of the evacuation, at the assembly area or just outside the building, to advise their area is clear (or to report anyone who can't or won't leave the building) after roll call
  - To **assist the person in charge** with crowd control, verbally encouraging people towards the assembly area
  - To take part in any **post-alarm de-briefing** to identify any shortcomings in the evacuation procedures

Evacuation Duties Simplified

- Safely evacuate floor or area when the fire alarm sounds
- Ensure everyone leaves the building immediately
- Go to the fire assembly point and take roll call
- Ensure no-one re-enters building until told to do so
- Liaise with health and safety representative

Fire Warden Evacuation Duties

- You need of course **knowledge** of (and be familiar with) your organisations:
  - Fire Safety Policy
  - Fire Evacuation Plan
  - Personal Emergency Evacuation Plans
    - To safely evacuate people from the building

Other Duties

- **You might also play a part in:**
  - Scheduled fire alarm testing
  - Personal emergency evacuation plans (PEEPs)
  - Fire risk assessments
  - Overseeing checking and maintenance of fire extinguishers and emergency lighting
  - Helping with the fire evacuation plan and overseeing regular fire drills
  - Ensuring good security to minimise the risk of arson
  - Good housekeeping and fire action awareness training

FIRE RISK ASSESSMENTS

- A **fire risk assessment** is an organised and methodical look at:
- The workplace
- The activities carried on there
- The likelihood that a fire could start and cause harm to those in and around the premises
- The '**responsible person**' must carry out and regularly review a fire risk assessment
- This will identify what needs to be done to prevent fire and keep people safe

Aims of the Assessment

- To identify the fire hazards
- To reduce the risk of those hazards causing harm to as low as reasonably practicable
- To decide what physical and management policies are necessary to ensure the safety of people in your building if a fire does start

Hazards and Risks

- **HAZARD**
- Anything with the potential to cause harm
- **RISK**
- The chance, high normal or low, of harm occurring

Things 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
- Providing information to employees and other people on the premises
- Staff fire safety training

Fire Safety Risk Assessment

- **The five steps:**
  - Identify the fire hazards
  - Identify the people at risk
  - Evaluate, remove or reduce, protect from risk
  - Record, plan, inform, instruct, train
  - Review

How to Use a Fire Extinguisher

Water

Suitable for most fires except those involving flammable liquids or live electrical apparatus.

1. Direct the jet at the base of the flame and keep it moving across the area of the fire
2. Seek out any hot spots after the main fire is extinguished
3. A fire spreading vertically should be attacked at its lowest point and followed upwards

Foam

Suitable for most fires involving flammable liquids, apart from cooking oil fires.

1. Where the liquid on fire is in a container, direct the spray at the back edge of the container or at an adjoining vertical surface above the level of the burning liquid. This allows the foam to build up and flow across the surface of the liquid to smother the fire
2. Where this is not possible stand well back, direct the spray with a gentle sweeping movement, allow the foam to drop down and lie on the surface of the liquid
3. Do not aim the spray directly into the liquid, as this will drive the foam beneath the surface and render it ineffective. In addition, it may splash the fire onto the surroundings

Dry Chemical (Powder)

Suitable for fires involving flammable liquids or electrical apparatus.

1. On fires involving either liquids in containers or spilled liquids, direct the nozzle towards the near edge of the fire. With a rapid sweeping motion drive the fire towards the far edge until all the flames are extinguished
2. On fires involving flowing liquids, direct the nozzle at the base of the flames and sweep upwards
3. On fires in electrical equipment, switch off the current if safe to do so and then direct the nozzle straight at the fire

4. Where the equipment is enclosed, direct the nozzle into any opening with the object of penetrating the interior
5. When the fire appears to be extinguished shut off the discharge and wait until the atmosphere clears. If any flame is then still visible, discharge again

Carbon dioxide

Suitable for fires involving flammable liquids or electrical apparatus.

Method and operating instructions as for dry powder.

1. Carbon dioxide extinguishers should NOT be used in confined spaces where there is a danger that fumes may be inhaled
2. DO NOT HOLD THE HORN SINCE IT BECOMES EXTREMELY COLD DURING USE

Wet Chemical Extinguishers

Specifically for use on fires in deep fat fryers.

DO NOT USE on fires involving live electrical equipment.

1. Turn off the source of heat if safe to do so
2. Hold the lance at arm's length, well above the fire with its nozzle at least 1 metre away from the fire

3. Holding the lance still, discharge so that the spraying wet chemical falls gently onto the surface of the fire
4. Even if the fire appears to go out quickly, discharge the entire contents of the extinguisher