

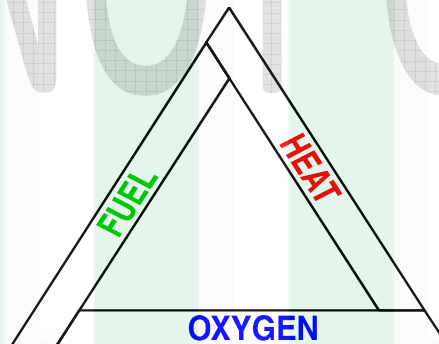
FC1 FIRE SAFETY AND RISK MANAGEMENT

Element 1 Managing Fire Safety

On completion of this element, candidates should be able to demonstrate understanding of the content through the application of knowledge to familiar and unfamiliar situations. In particular they should be able to:

- 1.1 Outline the moral, legal and financial consequences of inadequate management of fire safety
- 1.2 Outline the legal framework for the regulation of fire safety in new, altered and existing buildings (including government guidance)
- 1.3 Describe the roles and powers of enforcement agencies and other external agencies in relation to fire safety
- 1.4 Outline the key features of a fire safety policy
- 1.5 Outline the main sources of external fire safety information and the principles of their application
- 1.6 Explain the purpose of, and the procedures for, investigating fires in the workplace
- 1.7 Explain the legal and organisational requirements for recording and reporting fire related incidents.

1.1 THE MORAL, LEGAL AND FINANCIAL CONSEQUENCES OF INADEQUATE MANAGEMENT OF FIRE SAFETY



Fire is a chemical reaction, it is a hazard and risk which can have an adverse effect on any business.

Poor management of fire safety issues can impact on all businesses and all areas of its activities, whether it is a hospital, factory or office. The best managed organisations ensure that health and safety is part of every job role rather than being the remit of the company health and safety advisor. Those with responsibilities include all managers, employees, directors as well as those with specific responsibilities such as fire wardens and first aiders. Often health and safety issues may conflict with other business goals and objectives. For instance if employees store trolleys in front of a fire exit rather than in the designated area because this is closer.

As more and more civil actions are being undertaken, insurance companies are taking a higher profile in the investigation accidents and gathering evidence especially in cases where they believe there is potential for a claim. Insurance companies may influence organisations by making recommendations on the control measures required as without Employer's Liability insurance, organisations cannot legally trade. A majority of buildings will

be insured to cover the cost of rebuilding or repairs should a fire occur, as such their insurer will be interested see what actions the occupier/ employer is taking to prevent fires and mitigate their effects. As it is the insurer who will be potentially picking up the bill if something goes wrong.

There are a number of reasons why employers need to take steps to prevent the risks of fire. They can be summarised in three main groups; ethical and moral considerations, legal requirements and financial matters.

Why Manage Fire Safety in the Workplace?



1.1.1 Financial Matters

If a fire or even a false fire alarm is triggered a business could start experiencing a range of tangible and intangible loss.

Financial penalties such as lost materials, damage or down time start occurring. If there are any breaches of statute law there is also the risk of being fined following action by the relevant Fire Authority, Health & Safety Executive (HSE) or Environmental Health Officer (EHO).

Many employers believe that most of the costs of workplace fires will be covered by insurance but in some cases insurance only covers a very small percentage of the costs involved, even in the case of a major fire.

CASE STUDY A

BUNCEFIELD – Extract from 3rd progress report - Unconfined Vapour Cloud Explosion

On 11 December 2005 a significant amount of flammable vapours escaped and formed a flammable mixture that subsequently ignited at around 06.00 that morning with devastating consequences.

Timeline of events - 10 December 2005

Around 19.00, Tank 912 in bund A at the HOSL West site started receiving unleaded motor fuel from the T/K South pipeline, pumping at about 550 m³/hour (flow rates are variable within limits).

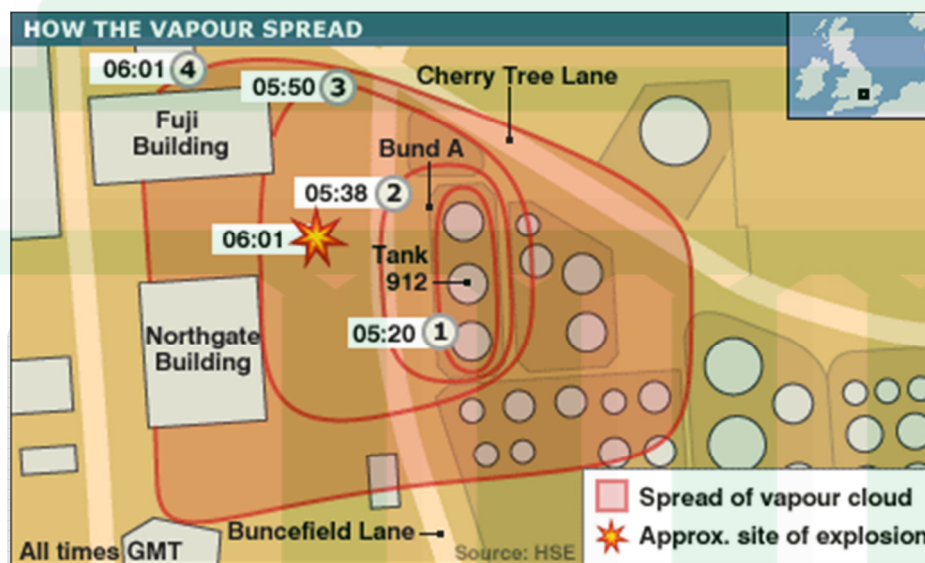


11 December 2005 At approximately midnight, the terminal was closed to tankers and a stock check of products was carried out. When this was completed at around 01.30, no abnormalities were reported. From approximately 03.00, the level gauge for Tank 912 recorded an unchanged reading. However, filling of Tank 912 continued at a rate of around

550 m³/hour. Calculations show that at around 05.20, Tank 912 would have been completely full and starting to overflow. Evidence suggests that the protection system which should have automatically closed valves to prevent any more filling did not operate.

From 05.20 onwards, continued pumping caused fuel to cascade down the side of the tank and through the air, leading to the rapid formation of a rich fuel/air mixture that collected in bund A. At 05.38, CCTV footage shows vapour from escaped fuel start to flow out of the north-west corner of bund A towards the west. The vapour cloud was about 1m deep.

At 05.46, the vapour cloud had thickened to about 2 m deep and was flowing out of bund A in all directions. Between 05.50 and 06.00, the pumping rate down the T/K South pipeline to Tank 912 gradually rose to around 890 m³/hour.



By 05.50, the vapour cloud had started flowing off site near the junction of Cherry Tree Lane and Buncefield Lane, following the ground topography. It spread west into Northgate House and Fuji car parks and towards Catherine House.

At 06.01, the first explosion occurred, followed by further explosions and a large fire that engulfed over 20 large storage tanks. The main explosion event was centred on the car parks between the HOSL West site and the Fuji and Northgate buildings. The exact ignition points are not certain, but are likely to have been a generator house in the Northgate car park and the pump house on the HOSL West site.

At the time of ignition, the vapour cloud extended to the west almost as far as Boundary Way in the gaps between the 3-Com, Northgate and Fuji buildings; to the North West it extended as far as the nearest corner of Catherine House. It may have extended to the north of the HOSL site as far as British Pipelines Agency (BPA) Tank 12 and may have extended south across part of the HOSL site, but not as far as the tanker filling gantry. To the east it reached the BPA site.

Buncefield Prosecutions

Five companies were ordered to pay £9.5 million for their part in the 2005 fire and explosion at the Buncefield Oil Storage Depot, in Hertfordshire. The ruling included £1.3 million in fines

for pollution offences – a record for a single incident in the UK – while a £3-million fine for Total was the second highest to be handed down for safety offences.

The fines, however, pale into insignificance compared to Total's estimated liability of up to £750 million for damages related to the incident at the Buncefield oil depot in December 2005. Concluding a four-month trial at St Albans Crown Court, Mr Justice Calvert-Smith said the companies had shown "a slackness, inefficiency and a more or less complacent attitude to safety."

The prosecution of Total UK Ltd, British Pipeline Agency Ltd (BPA), Hertfordshire Oil Storage Ltd (HOSL), TAV Engineering Ltd (TAV) and Motherwell Control Systems 2003 Ltd, followed the most complex investigation ever conducted by the Health and Safety Executive and Environment Agency.

Oil giant Total UK Ltd pleaded guilty to three offences and was fined £3.6 million (£3million for safety; £600,000 for pollution) and ordered to pay costs of £2.6 million. Supply company British Pipeline Agency Ltd pleaded guilty to three offences and was fined £300,000 for environmental offences and ordered to pay costs of £480,000.

Hertfordshire Oil Storage Ltd was found guilty of two offences and fined £1.4 million (£1million for safety; £450,000 for pollution) with costs of £1 million

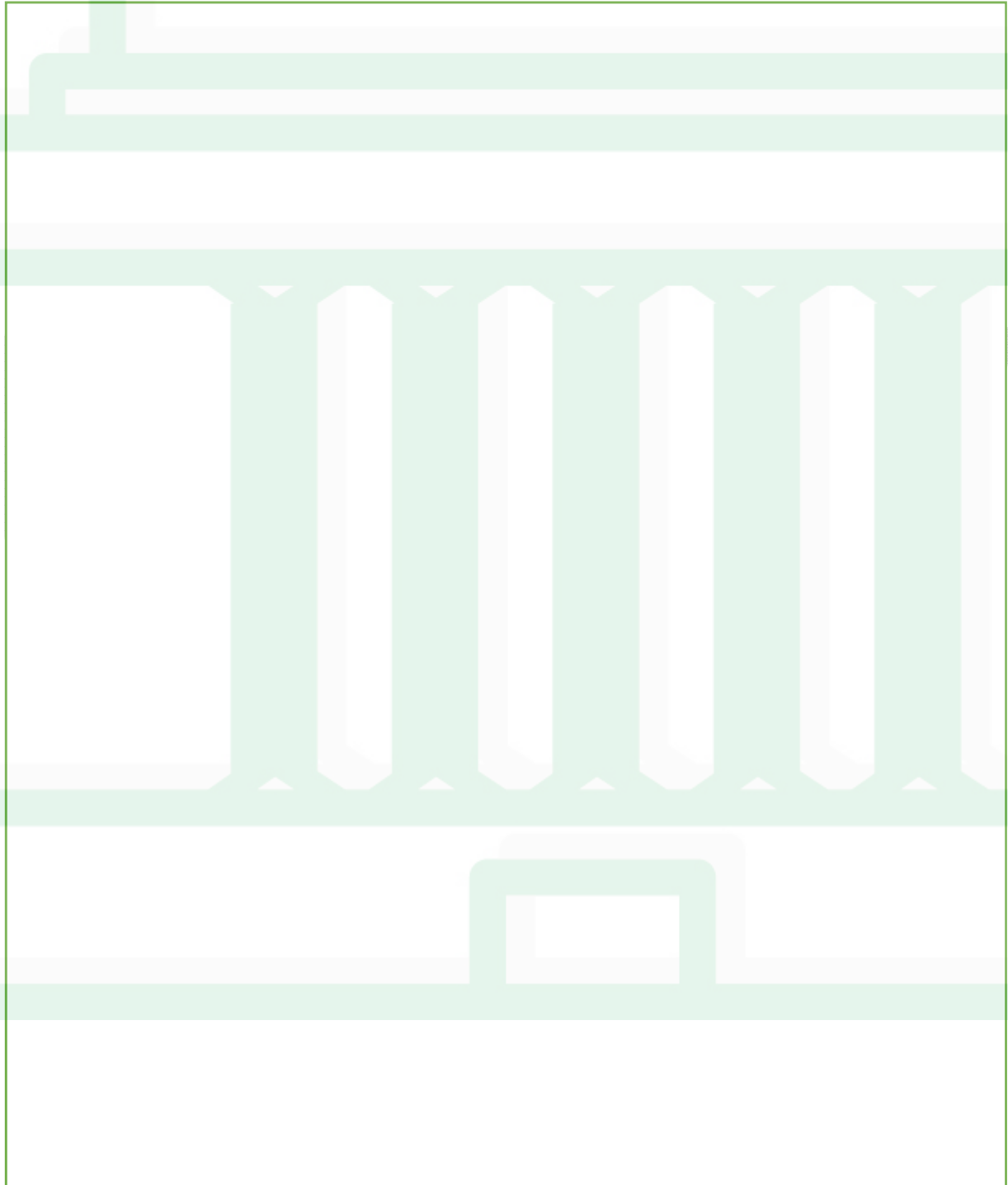
TAV Engineering Ltd, which designed a crucial safety switch that failed, was found guilty of one offence, fined £1,000 and ordered to pay £500 costs

Installation and maintenance company Motherwell Control Systems 2003 Ltd fined £1,000 and ordered to pay costs of £500 after being found guilty of one offence.

The investigation uncovered a series of serious failings that led to thousands of gallons of petrol being released in a large vapour cloud. The resulting explosion registered at 2.4 on the Richter scale, injured 43 people, destroyed nearby businesses and caused significant environmental damage.

The cost of the fines although significant were by no means the largest expenditure associated with the accident. The businesses involved incurred a range of other costs to deal with the immediate and longer term implications of the event.

Identify potential costs to business such as Buncefield in 2005 where no one was killed or seriously injured but a fire and number of explosions occurred.



The uninsured (or in some cases uninsurable) costs associated with fire related accidents include:

- administration/accident investigation
- medical/first aid treatment
- lost time of injured person and lost time for other employees if the site or part of the plant is shut down.
- lost time of other employees
- loss of production/business interruption
- repair to damaged plant/equipment
- clean up costs
- disposal of contaminated waste
- replacement of damaged materials
- cost of evidence gathering and any scientific investigations
- ongoing costs of monitoring land once it has been polluted by fire water
- court fines
- legal fees
- consumer confidence and lost customer confidence

In 2015 the cost to the UK as a whole for fires was estimated at over £1 billion. As the price of materials, equipment and labour increases as will the costs associated with any fire events. There is a downward trend on the number of fires in the last twenty years but the actual loss involved is still increasing. Data shows that almost 25% of companies which experience a severe fire never reopen or recover.

1.1.2 Fire-related fatalities and injuries and environmental damage

Fire and Rescue Statistics are published each year. For the year ending December 2017 (1 January 2017 to 31 December 2017) for fire and rescue services (FRSs) in England. This is the third set of statistics published by the Home Office that cover the Grenfell Tower fire. The results show:

- FRSs attended 563,527 incidents in the year ending December 2017. This was a less than one per cent increase compared with the previous year (560,874) but a 34 per cent decrease compared with ten years ago (854,371 in 2006/07).

The total number of incidents was on a downward trend for around a decade, though they have increased in recent years mainly driven by increases in non-fire incidents attended. However, the small increase this year was mainly driven by an increase in fires attended.

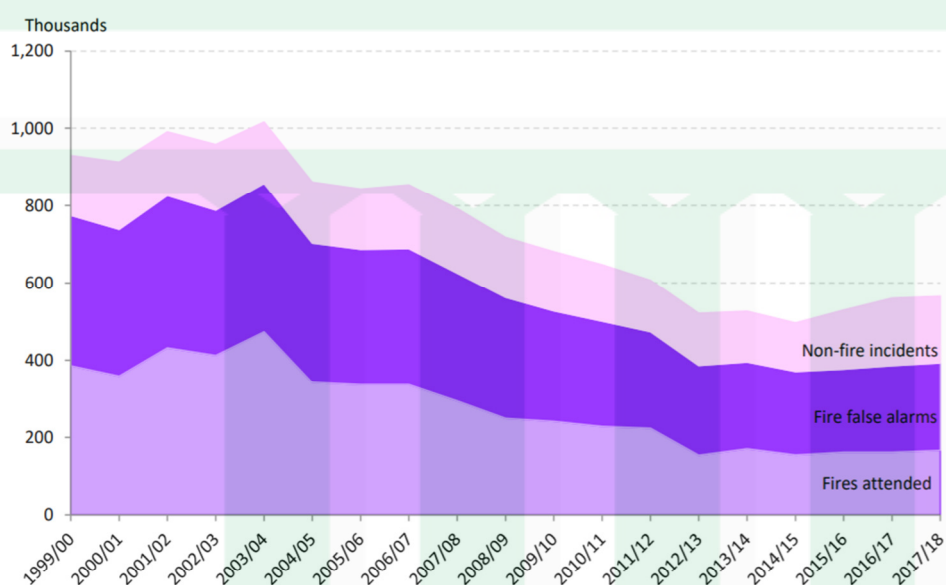
- FRSs attended 169,588 fires in the year ending December 2017. This was a four per cent increase compared with the previous year (162,427) but a 50 per cent decrease compared with ten years ago (336,233 in 2006/07). The increase in fires is driven by an increase in secondary fires with primary fires showing a small decrease.

- FRSs attended 223,383 fire false alarms in the year ending December 2017. This was a one per cent decrease compared with the previous year (224,862) but a 37 per cent decrease compared with ten years ago (352,136).

- FRSs attended 170,556 non-fire incidents in the year ending December 2017. This was a 10 per cent increase compared with the previous year (155,862) but a 37 per cent decrease compared with ten years ago (270,862). There had been a general decline in the number of non-fire incidents. However, recent years have shown large increases, largely due to a rise in medical incidents attended. The recent decrease in non-fire incidents is mainly due to a decline in emergency medical responding linked to many of the trials stopping in September 2017.

- Of all incidents attended by FRSs in the year ending December 2017, fires accounted for 30 per cent and non-fire incidents 30 per cent. The remaining 40 per cent were fire false alarms, which continued to be the largest incident type. In 2006/07 these percentages were 39 per cent (fires attended), 19 per cent (non-fire incidents) and 41 per cent (fire false alarms).
- The number of fire-related fatalities had been on a general downward trend since 1981/82 when there were 755 fire-related fatalities. In the year ending December 2017, however, there were 321 fire-related fatalities (including 71 from the Grenfell Tower fire) compared with 278 in the previous year (an increase of 15%)

Figure 3.1 Total incidents attended by type of incident, England; 1999/00 to 2017/18



Source: FIRE0102

Traditionally the biggest cause of fires in the UK is arson or wilful fire raising, typically this ranges from 30 – 50 per cent of annual fires. For industries such as construction, recreation, agriculture, health care facilities and schools, they all tend to be subject to high levels of arson attacks.

Further information

Latest data and statistics on fire issues in the UK are published on the .gov.uk web site, for example <https://www.gov.uk/government/collections/fire-statistics-great-britain>.

1.1.3 The Costs of False Alarms

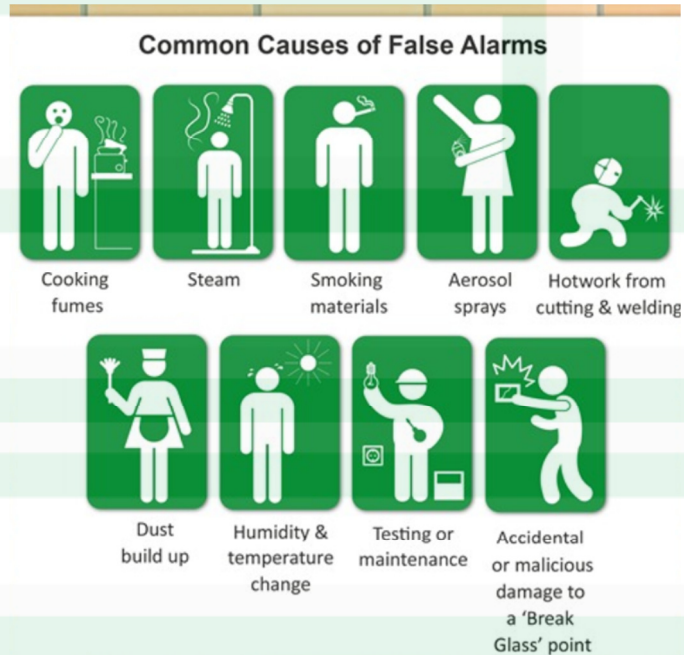
In the last few years a majority of emergency services have seen a rapid growth of installed automatic fire detection (AFD) and automatic fire alarm (AFA) systems due to their success in providing an early warning in the event of a fire, saving lives and limiting property damage.

While the fire service is dealing with a false alarm they are not available to tackle real fires, they waste essential resources (putting lives at risk) and they disrupt other activities such as training and community fire safety work.

However, the problem is not exclusive to the fire service as false calls (sometimes referred to as unwanted fire signals), also erode employer confidence in the value and reliability of their AFD systems and can cause costly interruptions to manufacturing work procedures.

A false alarm or “unwanted fire signal” can be caused by a variety of reasons, most of which can be eliminated by careful planning. Typical sources of false alarms are:

- activation of a smoke detector by airborne pollutants
- vandalism/malicious action
- human error (generally due to unfamiliarity with the system)
- faulty or non-maintained equipment



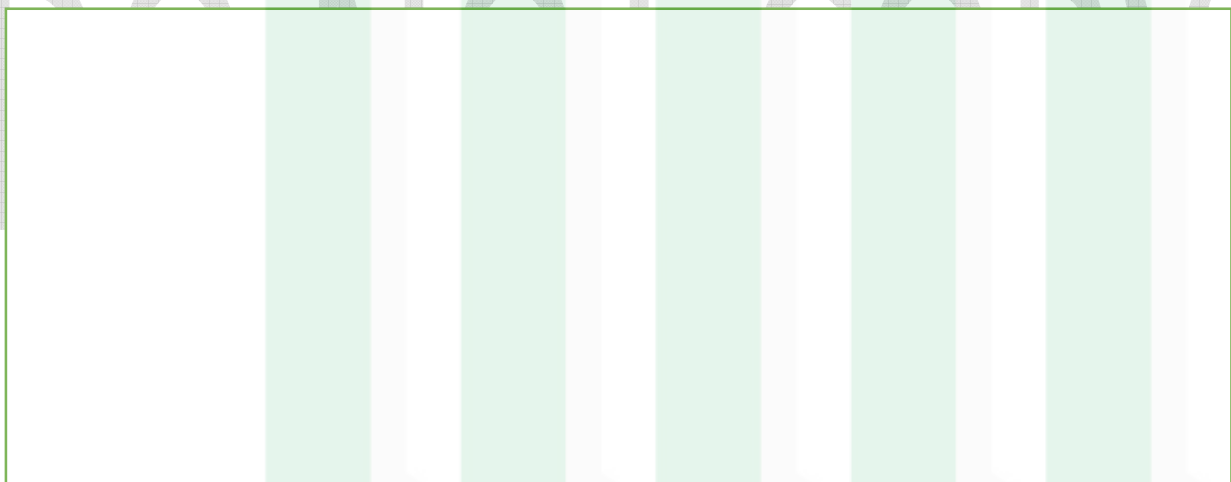
What problems and costs could be associated with false alarms?

1.1.4. Ethical and Moral Considerations

Most people would agree that, whatever risks they choose to take themselves, it is unacceptable to put other people at risk, particularly when this is done without their knowledge or consent. Put simply, everyone is entitled to feel confident that they will go home in one piece! No-one wants to suffer an injury or see a colleague injured as a result of a fire. Equally if there is a major fire this could have an impact on the business and individual as if the building is not usable this could mean the end of business and employment opportunities.

If a fire occurs in the workplace employees may be directly affected by ill health or injury. If a major fire occurs even if there are no major injuries there may be psychological effects on those involved. These could become apparent in the short term but also in the long term sometime after the original event.

What effects could there be for the families of those involved in a workplace fire?



Potential Consequences of Fire

- Loss of life
- Loss of friends or family
- Injury or disability
- Loss of home, workplace, income, job
- Loss of irreplaceable belongings
- Financial (uninsured losses and premiums)

Image showing a fire in a university building.



1.1.5. Legal Requirements

Fire and H&S legislation places a number of duties on organisations, managers and employees alike. Failure to carry out these duties can result in fines and, in extreme cases, imprisonment. The basic principle is that every employee must take reasonable care for the safety of themselves and of others who may be affected by their acts or omissions. Both companies and employers can find themselves being sued if their employees injure third parties or prosecuted by the relevant Fire Authority or H&S inspector if they are found to have breached statute law.

The Health and Safety at Work Act 1974 does not directly cover fire issues these are covered by the Regulatory (Fire Reform) Order of 2005 and the Construction Design and management Regulations of 2015. However a range of H&S legislation can impact on fire issues such as Electricity at Work Regulations (a number of workplace fires are caused by electrical faults), the Workplace (Health, Safety and Welfare) Regulations (these cover the floors, doors and housekeeping standards) along with the Dangerous Substances Explosive Atmospheres Regulations which cover substances which are either flammable or oxidising.

Employers and occupiers of premises owe a common law duty to those who could be affected by a fire event. This could include building users, tenants, visitors, contractors. It may also spread further as if a fire takes hold building debris may spread far and wide, duties are therefore extended to others who may include members of the public and even members of the emergency services dealing with any incidents.

The first Occupiers Liability Act of 1957 imposed a common law duty on occupiers of premises. Where an employee goes to work on third party premises, his employer is liable if the employee is injured through the employer having failed to set up a safe system of work. But if the employee is injured by a structural defect in the premises which is not incidental to the work, the employer is not liable. So the injured person must sue the occupier of the premises.

If the emergency services were called to a fire in an unoccupied construction site, where there were lift shafts and stairwells unprotected, should a member of the emergency services injure themselves whilst tackling a fire then they would be covered by the occupiers liability act requirements designed to protect authorised visitors.

The requirement to protect authorised visitor was extended by the Occupiers Liability Act 1984. The updated Act states that the occupier has a duty to trespassers who may be at risk when on the premises. As before the duty can be discharged by issuing some form of warning e.g. a notice but they have to be very specific – “Live electric cable” not just “beware”. There must be active management to protect - merely putting up an unclear sign is not acceptable to meet the requirements.

If civil action is taken by a person who is an authorised visitor - they have the right to sue under the 1957 Act, if the person is an unauthorised visitor they have the right to sue under the 1984 Act.

1.2 THE LEGAL FRAMEWORK FOR THE REGULATION OF FIRE SAFETY IN NEW, ALTERED AND EXISTING BUILDINGS

Historical Context

- Great Fire of London 1666 (5 died)
 - Changes in building regs and design
- Keighley Mill Fire 1956 (8 died)
 - Factories Act 1961
- Henderson Dept Store 1960 (11 died)
 - Offices, Shops & Railway Act 1963
- Bolton Night Club 1961 (19 died)
 - Licensing Act 1964
- Hotel fire in Saffron Walden 1969 (11 died)
 - Fire Precautions Act 1971
- Woolworths, Manchester 1979 (10 died)
 - Upholstered Furniture Safety Regs 1980
- Bradford City Football 1985 (58 died)
 - Fire Safety Sports Ground Act 1987
- Kings Cross 1987 (31 died)
 - F.P. (Sub Surface Railway Stations) Regs Act 1989

In 2000 UK fire safety provisions were scattered across more than 100 different pieces of legislation, all with many implications on businesses, and some with overlaps between their requirements.

This was confusing to businesses as they attempted to become compliant with this raft of legislation. The aim of the Regulatory Reform (Fire Safety) Order 2005 (RRFSO) – produced under the Regulatory Reform Act – was to ‘simplify, rationalise and consolidate existing legislation’.

The RRFSO applies to virtually all premises and covers nearly every type of building, structure and open space. For example, it applies to:

- Offices and shops;
- Premises that provide care, including care homes and hospitals;
- Community halls, places of worship and other community premises;
- The shared areas of properties where several households dwell
- Pubs, clubs and restaurants;
- Schools and sports centres;
- Tents and marquees;
- Hotels and hostels; plus
- Factories and warehouses.

The RRFSO covers workplaces, these include any premises or parts of premises, not being domestic premises, used for the purposes of an employer’s undertaking and which are made available to an employee of the employer as a place of work and include:

- any place within the premises to which such employee has access while at work; and
- any room, lobby, corridor, staircase, road, or other place used as a means of access to or egress from that place of work.
-

It does not apply to private homes, including individual flats in a block or house. It covers those in “Control” of premises which include owners, occupiers and employers.

Employers must:-

- Carry out a fire-risk assessment identifying any possible dangers and risks;
- Consider who may be especially at risk;
- Eliminate or reduce the risk from fire as far as is reasonably possible and
- Provide general fire precautions to deal with any possible risk left;
- Take other measures to make sure there is protection if flammable or explosive materials are used or stored;
- Create a plan to deal with any emergency and, in most cases
- Review plans and assessments when needed
- Train and inform those on site
- Provide minimum standards for warning and alarm
- Ensure the means of escape is maintained
- Appoint a responsible person to co-ordinate their fire safety arrangements
- Maintain any fire protection systems

Responsible Person Nomination and Duties

Every site must have a named responsible person, this could be

- **Employer** – *assuming control*
- **Person with control** – *assuming trade, business or other undertaking (profit or not); or*
- **Owner** – *assuming person in control has no trade, business or other undertaking*

There is an absolute duty to ensure a “suitable and sufficient risk assessment” is completed. This must be completed by a competent person, this could be an internal employee or an external assessor. Any significant findings *should* be recorded – and must be if five or more employees, a licence is in force on the premises, or an alterations notice is in force. The responsible person must ensure that general fire precautions are taken to ensure the safety of all employees and other relevant persons who are not employees. They need to ensure that the premises are safe from fire.

Employees must:-

- Take reasonable care of self and others
- Comply with any requirements imposed by the employer in relation to fire safety
- Inform the employer of serious and imminent danger
- Identify any shortcomings in fire arrangements (these are a combination of the requirements already in HASAWA and the Management of Health and Safety At Work Regulations but here they are related to fire safety issues)

Under the RRFSo, anyone who has control of premises or anyone who has a degree of control over certain areas or systems may be a ‘responsible person’. For example, it could be:

- the employer for those parts of premises staff may go to;
- the managing agent or owner for shared parts of premises or shared fire safety equipment such as fire-warning systems or sprinklers;
- the occupier such as self-employed people or voluntary organisations if they have any control; or any other person who has some control over a part of the premises

The employer must take measures to reduce the risk of fire starting and the risk of the spread of fire on the premises. This will include:-

- Measures in relation to the means of escape from the premises;
- Measures for ensuring that, at all material times, the means of escape can be safely and effectively used;
- Measures in relation to the means for fighting fires on the premises;
- Measures in relation to the means for detecting fire on the premises and giving warning in case of fire on the premises;
- Measures in relation to the arrangements for action to be taken in the event of fire on the premises, including
 - measures relating to the instruction and training of employees;
 - measures to mitigate the effects of the fire.

This is a general duty on the responsible person to take general fire precautions so far as is reasonably practicable. This duty aims to protect employees and others on the premises. This involves weighing up the risk of fire, the higher the risks the steps and resources which need to be allocated to reduce the risks.

The responsible person must make a suitable and sufficient risk assessment which must be reviewed if there are any significant changes. If 5 or more employees are employed the assessment must be recorded. Details which must be recorded include the significant findings and the groups of people at specific risk. Once the assessment is completed the usual principles of prevention must be applied including elimination and reduction of the risks before firefighting and detection devices are used. The assessment should be reviewed if there is a significant change and normally at least every 12 months to ensure it is up to date.

Implications of the new legislation in 2005.

- Changes should reduce workplace fires therefore reduce associated costs
- Legislation less onerous and clearer
- Responsible person held accountable
- Fire Authorities can advise on but not carry out fire risk assessments

See the supplementary handout provided with details on the scope of the Regulatory Reform (Fire Safety) Order 2005 (RFSO).

1.2.1 Statutory Framework

The Regulatory Reform (Fire Safety) Order 2005 (RFSO) is supported by a number of Fire Guidance notes published by the Communities and Local Government practical fire safety guidance. These provide the detail to support the requirements of the order, but if standards are not met it is the Order itself which will be used in any resulting prosecution. They have become a de facto standard i.e. the one employers and occupiers are expected to follow but the guidance does not cover every single different situation so those with responsibilities need to ensure their arrangements reduce the risk, as just because something is not in the guidance if this would be a sensible and as far as is reasonably practicable control means it should still be implemented.

Fire authorities continue to offer advice to ensure employers are able to discharge their responsibilities and a series of fire guides are available to help the employer. These have key sections which are identical but then specific sections relating to areas such as factories, educational establishments, shops, offices and places of entertainment. They can be

downloaded free of charge at <http://www.firesafetyguides.co.uk/> or from your Cambridge Safety online resources. Example guides cover:-

- Factories
- Offices and shops
- Schools
- Premises with sleeping accommodation
- Educational premises
- Small and medium places of assembly
- Healthcare premises
- Open air gatherings and events



Document	Legal Status	Issued by	Example
Statute – Act	Legally binding	Parliament	Health & Safety at Work Act 1974
Order	Legally binding	Parliament	Regulatory (Fire Reform) Order 2005
Regulations	Legally binding Statute law Cover specific issues Power from the enabling Act	Parliament (drafted by HSE, Fire Authority or Environment Agency)	Management of Health & Safety at Work Regulations
Approved Code of Practice (ACOP)	Not legally enforceable but can be used in evidence against the company or individual in a court of law. <ul style="list-style-type: none"> • How to comply with the legislation. • Shows general principles. • Companies must show they have complied with the ACOP or done better in a different way. 	HSE	Dangerous Substances Explosive Atmospheres Regulations ACOP L138
Code of Practice (COP)	Not legally enforceable but provides useful guidance on meeting legal requirements.	Industry bodies	
Guidance Notes	Guidance only. Technical details.	Local Communities Fire	Fire Safety Risk Assessment – Factories and Warehouses

(GN)	Specific issues	Guidance HSE	
British or European Standards	Not legally enforceable	BSI	BS 5266 Part 1: Emergency lighting – code of practice for the emergency lighting of premises. BS 5839 Part 1: Fire detection and alarm system for buildings – code of practice for system design, installation and servicing BS 5306 Part 1: Fire extinguishing installations and equipment on premises – fire hydrant system, hose reels and foam inlets. BS9999: Fire safety in the design, management and use of buildings

The Health and Safety at Work Act 1974 is an enabling Act which allows the secretary of state to bring in regulations. The Dangerous Substances and Explosive Atmospheres Regulations cover dangerous substances which include flammables, explosives and oxidisers. These regulations are supported by several guidance notes and are enforced by the Health and Safety Executive.

1.2.2 Statutory Duties:

There are three levels of duty under statute law

Absolute – these requirements must be met. Many of the requirements within the Regulatory (Fire Reform) Order are absolute. The duty to appoint a responsible person is absolute.

So far as is practicable – action must be taken if it is technologically possible regardless of cost, time, effort and trouble.

So far as is reasonably practicable (SFAIRP) – The employer is permitted to weigh up the risks of injury alongside the costs and resources required to control or prevent them. The higher the risk the more effort and resources must be put into solving the problem or reducing the risks.

REASONABLY PRACTICABLE



1.3 THE ROLES AND POWERS OF ENFORCEMENT AGENCIES

There are a number of inspectors who have statutory authority to enforce health and safety related legislation, including the Health & Safety Executive (in factories, motor vehicle workshops and construction), Local Authority Environmental Health Officers (offices, shops and food safety), Fire and Rescue authorities and Environment Agency Inspectors (from either England, Wales, Scotland or Northern Ireland). The Local Authority deals with the RFRO in Sports Grounds and they also liaise with the Fire Authorities when buildings are built or extended as required by the Building Regulations. There are also several other specialist inspectors dealing with radiation, the railways, offshore industries and the highways. The Office of Rail Regulation enforces issues within the rail industry.

The Police have the legal right to investigate any death and may pursue investigations into corporate manslaughter. If they decide to make a prosecution this will be taken on their behalf by the Crown Prosecution Service. In Scotland prosecutions are taken by the Procurator Fiscal.

Every Fire Authority enforces the Regulatory Fire Reform Safety Order. The Fire Authority have jurisdiction in the vast majority of places although there is some dual enforcement such as the HSE on construction sites as required by the Construction Design and Management Regulations 2015, also in nuclear installations and in ships under repair. Local Authorities have control over sports grounds and stands where a Safety Certificate is required.

Dual enforcement is where two or more agencies both enforce safety on one particular site

Fire Authority Inspector Powers (very similar to powers of the HSE inspector)

- The right of entry at any reasonable time to obtain information relating to fire safety. They cannot force entry.
- To inquire into whether the regulations or order are being complied with
- To identify the responsible person
- To require for information to be provided in either paper or computerised form
- To keep any documentation or take copies
- To request the use of facilities or assistance
- To take samples
- To dismantle, seize, test and destroy
- Show evidence of their authority
- Consult with appropriate persons on site
- Bring others and any equipment they feel necessary
- Require those on site to provide facilities, information or documents or assistance they reasonably request.
- Inviting individuals to attend a voluntary Police and Criminal Evidence Act (PACE) interview under caution. The interview will be recorded and can be used in any future investigation or prosecution. If they do not wish to attend they can submit a written statement. The purpose is to give individuals an opportunity to comment on the results of the fire investigation. Once this occurs it will be down to the senior investigating officer to decide whether a prosecution is likely to follow.

Section 45 of the **Fire and Rescue Services Act 2004 (FRSA)** gives the power of the authorised officer to entry at any reasonable time if there has been a fire on the premises. It is an offence to obstruct inspectors in carrying out their duties or to fail to comply with any requirements that inspectors may impose. Appeals against notices must be made to the courts within twenty one days.

The fire authority can provide verbal advice, written notification of defects before embarking on more formal courses of action.

Alteration Notices

These notices may be served on the responsible person if the Fire Authority believes that the premises constitute a serious risk or if the risk would occur if the building use changes.

This notice will state who the enforcing authority is and what the issue is that constitutes a fire risk. Once served the responsible person must investigate the issues and then consult with the Authority before making any changes.

The type of changes covered includes change to premises, change to services or equipment, increase in the amount of a dangerous substance stored or a change of use in the premises. Normally a new risk assessment will be completed and shown to the Fire Authority to show the changes to the building etc. have been considered and fire safety standards will not be interfered with or lessened.

An alteration notice may be withdrawn at any time or can be cancelled by the courts.

Enforcement Notices

Where a Fire Authority is of the opinion that any fire related legal duty is breached e.g. the duty to provide the means of escape, carry out a risk assessment or the means for fighting fire, the responsible person or occupier of the premises could be served with an improvement notice.

The notice will set the details of the enforcing authority, what provisions have not been complied with and what action must be taken. The notice will indicate the action to be taken to remedy the contravention and state a timescale for completion of the improvements which will be no less than 28 days). An appeal against an improvement notice must be made to the Magistrates' Court within 21 days.

The fire officer may consult with the HSE, Building regulators or Local Authority before serving one of these notices.

The timescale for action may be extended by the Fire Authority if appropriate.

Prohibition Notices

The Fire Authority may serve a prohibition or restriction notice in any case where the risk of fire is serious. The notice must:

- State that the Fire Authority is unhappy with the fire risk present and specify the matters which, in their opinion, give rise to that risk.
- Direct that the use of the premises (or part of premises) is prohibited or remedied.

A prohibition notice is effective immediately and may include steps to be taken to remove the risk from fire. The Fire Authority may withdraw the notice at any time. Any appeal against the notice is made to a Magistrates' Court within a 21-day period of it being served but the notice is not suspended pending the hearing of such an appeal.

Penalties under the Regulatory Fire Reform Order 2005

Employer – Unlimited Fine for indictable offences

Individual – Unlimited Fine for indictable offences and two years in prison

1.3.1 Notices served by the Health and Safety Executive (HSE) which may impact on fire safety and dangerous substances

The HSE could serve these notices for breaches of the Dangerous Substances Explosive Atmospheres Regulations as well as other H&S legislation.

Improvement Notice

If the Inspector is of the opinion that legislation is being contravened or about to be broken then an improvement notice may be issued. The legislation breached must be identified. The improvements must be made within the specified time period. Normally employers are given at least 21 days to comply. They can appeal to an **Employment Tribunal** if they disagree with the notice.

Prohibition Notice

If an Inspector discovers a situation with a high risk of personal injury, he/she can issue a Prohibition Notice. This notice comes into effect immediately and can stop a process, use of equipment or workplace. Until remedial action has been taken, the process, equipment or area may not be used.

- Can be issued even if no direct contravention of law exists
- Can take effect immediately or at a later time
- Can be served on a person including the person in control
- Right of appeal to an **Employment Tribunal**
- Any person served with a notice which is not complied with, could be prosecuted

1.3.2 Powers of authorised officers under the Fire and Rescue Services Act 2004

The Fire and Rescue Services Act 2004 gives a range of specific powers for authorised fire officers in order to either fight fires or investigate into the causes of fires. The key sections within the Act are included below.

Section 6 Fire safety

The Fire and Rescue Service already carries out a wide range of activities to promote community fire safety, with the aim of preventing deaths and injuries in the home and reducing the impact of fire on the community as a whole. This includes fire safety education (especially for vulnerable groups), smoke alarm installation, chip pan safety demonstrations and fire safety checks for householders and others. Many fire authorities also provide training programmes for young people and work with local businesses, agencies and partnerships (such as crime and disorder partnerships and local strategic partnerships).

Section 7 Fire-fighting

Firefighting re-enacts the existing statutory duty for a fire and rescue authority to plan and provide arrangements for fighting fires and protecting life and property from fires within its area. With sufficient equipment etc. and training to discharge its duty in normal circumstances. They must also put in place effective arrangements for receiving and responding to calls for help and for obtaining information to exercise its functions; the latter might include, for example, information about the nature and characteristics of buildings within the authority's area or availability of and access to water supplies.

Section 8 Road traffic accidents

Places a duty on fire and rescue authorities to make provision for rescuing persons from road traffic accidents and for dealing with the aftermath of such accidents.

Section 9 Emergencies

Under the Fire Services Act 1947, fire and rescue authorities are not required to make provision for emergencies other than fires. However, an increasing amount of the Fire and Rescue Service's time is spent responding to emergencies, other than road traffic accidents and fires, such as chemical spills and flooding.

Section 11 Power to respond to other eventualities

Provides fire and rescue authorities with discretion to equip and respond to events beyond its core functions. A fire and rescue authority will be free to act where it believes there is a risk to life or the environment. This would allow, for example, specialist activities such as rope rescue. A fire and rescue authority will be able to exercise the power in support of another fire and rescue authority.

Section 12 Other services

Other services provides a fire and rescue authority with the power to agree to the use of its equipment or personnel for any purpose it believes appropriate and wherever it so chooses. For example, a fire and rescue authority may agree to help pump out a pond as a service to its community.

Section 45 Authorised Entry

This gives the power of the authorised officer to entry at any reasonable time if there has been a fire on the premises. It is an offence to obstruct inspectors in carrying out their duties or to fail to comply with any requirements that inspectors may impose. Appeals against notices must be made to the courts within twenty one days.

The key issues are that all Fire and Rescue Authorities must make provision for the purposes of:

- extinguishing fires in its area, protecting life and property in the event of fires in its area & rescuing and protecting people in the event of a road traffic accident
- rescuing and protecting people in the event of emergencies
- the right of entry

1.4 THE KEY FEATURES OF A FIRE SAFETY POLICY

Company's legally have to have an H&S policy as required by the Health and Safety at Work Act 1974. A fire specific policy may follow the same format as the H&S policy with a statement of intent, organisation section showing roles and responsibilities and practical arrangements.

1.4.1 POLICY STATEMENT

The policy will tend to start with a statement of intent where a member of the senior management team sets out the company's aims and intentions in relation to fire safety.

The policy statement will be supported by a section which will outline the roles and responsibilities for fire safety within the organisation, along with reporting lines and communication channels. This may include specific named individuals responsibility for overall responsibility for Fire Safety, maintenance, Emergency Plans and Staff Training etc. A senior person needs to take overall control of the evacuation, ensuring that other people with specific duties have taken relevant action, they need to account for all persons in the premises and liaise with the Fire and Rescue Service and Initiate any additional response in relation to the care of people with special needs.



Who has roles and responsibilities for fire safety within a typical organisation?

1.4.2 ROLES AND RESPONSIBILITIES (ORGANISATION)

A few example responsibilities are included below.

Chief Officers / Managing Directors will:

- ensure that this Policy and/or any departmental fire safety policies/codes of practice that complement this Policy are in place, properly implemented and reviewed.
- ensure that a Responsible Person is appointed for all of their premises to oversee and implement fire safety arrangements, and ensure that they are competent and appropriately trained to undertake their duties;
- ensure that arrangements are in place for the completion of fire risk assessments, including, where appropriate, technical surveys in respect of fire protection;
- ensure that fire, security, and health and safety arrangements at each premises are complementary.

Managers with responsibility for premises or parts of premises will:

- ensure that fire risk assessments are carried out for all their workplaces, and for specific activities such as hot working involving welding, cutting, work with bitumen, etc.;
- ensure, in conjunction with the outcome of the fire risk assessment that the optimum number and type of fire extinguishers are installed in appropriate locations;
- ensure that fire alarm and detection systems, emergency lighting and fire extinguishers are appropriately located and properly maintained;
- ensure that a robust and effective emergency plan is in place at each location to safely evacuate all persons, whether employees, visitors or service users. This emergency plan must take into account people with mobility, some sensory and some learning impairments, including those with temporary impairments, which will affect their ability to use stairs or otherwise evacuate premises promptly. The plan must be internally deliverable and not reliant on the Fire and Rescue Service to complete the evacuation;
- arrange for the emergency plan to be issued to their employees, visitors, etc. to inform them what to do in the event of fire, particularly safe evacuation;
- arrange for a competent responsible person (who may also be the premises coordinator) to be nominated to oversee and implement fire safety arrangements at their workplace(s) on their behalf;
- ensure that if there is any doubt about the provision of new or replacement fire extinguishers;
- ensure that staff are appropriately trained in fire safety procedures to reflect the requirements of the fire risk assessment;
- Liaise with the local trade union safety representative, where appointed, on all aspects of the above arrangements.

Company Fire Adviser or Responsible Person (who must be competent to carry out this role) must:

- assist and support with the preparation and review (at least annually) of fire safety risk assessments;
- prepare and review the emergency plan issued to all staff; carry out training
- ensure information on fire safety arrangements is available to service users and visitors;
- ensure all staff and, where appropriate, contractors are instructed in the emergency plan.

- arrange and review fire drills at a frequency of not less than six months;
- specify and rehearse the arrangements for assisting visitors, disabled people or those with temporary physical impairments to safely evacuate the premises. Where appropriate, a PEEP must be developed;
- ensure Fire Alarms are regularly tested at the recommended frequency e.g. weekly;
- monitor that fire alarm systems, detection devices, emergency lighting and fire extinguishers are appropriately and regularly maintained;(keep the fire log book or equivalent up to date)
- ensure that fire action notices (displayed as a minimum at fire alarm call points) and fire signage are appropriate and kept up to date;
- ensure all escape routes are kept clear of obstructions and that access to fire extinguishers and fire alarms is not impeded; (including internal and external escape routes)

1.4.3 ARRANGEMENTS FOR FIRE SAFETY

It is important that a wide range of measures are taken to reduce the risk of fire, this includes steps to prevent a fire from occurring in the first place as well as steps to mitigate or reduce the impact should a fire occur. It is important that any rules, procedures or systems are communicated, employees trained to follow them and then steps are taken to ensure that these procedures and systems remain effective. This may mean disciplinary action is taken if employees breach the rules e.g. Smoking in a non-designated area. This section will cover some of the specific issues such as maintaining the means of escape, compartmentalisation, fire detection, fire alarms and provision of firefighting equipment.

The management arrangements will consider how many people use the building, are there any young people or those who would have difficulty evacuating without assistance? Element 6 goes through the specifics of a fire risk assessment but the issue is introduced here as ensuring arrangements are in place for the vulnerable needs to be considered in the development of any fire or emergency plans. A PEEP is a **Personal Emergency Evacuation Plan**. It is a bespoke 'escape plan' for individuals who may not be able to reach an ultimate place of safety unaided or within a satisfactory period of time in the event of any emergency.

1.4.4 MONITORING

There are two parts to monitoring performance, reactive monitoring which looks at past events such as accidents or false alarms and active (or proactive) monitoring which measures more positive issues such as the amount of fire training that has been undertaken or the number of risk assessments reviewed. This data can be used to check how far the company is achieving its standards

The following key performance indicators (KPI) could be used to monitor the effectiveness of a Fire Safety Management Plan: -

- Number of fires recorded annually / number of fire related incidents.
- Achieving set schedules and time frames (evacuation drills and building audits).
- Measuring the number of Fire Service call outs against cause.
- Number and nature of enforcement, alterations or prohibition notices from statutory authorities.
- Quarterly / six monthly/ annual premises inspection and meetings to ensure actions and progress are made.
- Annual audit of all fire systems by the chief executive / managing director.

Monitoring - Degraded systems planning

There are a variety of systems implemented to ensure that the risks of fire are reduced, however if these systems degrade or become faulty the safety of employees, others and the building could be adversely effected. Systems and procedures need to be in place to responds to fault reports but also seek out problems to ensure they can be rectified. The day that a fire occurs, is not the day to realise that the fire alarm point in the canteen has not been wired in or is not working. Systems which are not maintained will degrade quickly.

Active fire protection systems require to be well maintained to ensure reliability. In particular systems using water and water based foam are prone to rust deposits which can block sprinkler heads and spray nozzles. Emergency lighting may have back up batteries which need to be tested regularly and every 5 years or so they will need to be replaced to ensure they work when needed. Procedures should be in place to ensure regular maintenance and testing of systems. Maintenance contracts are often placed with the supplier of the fire protection system. Records of these activities should be kept by site operators.

The performance of passive fire protection systems can deteriorate in time due to weathering and corrosion. Plant operational and maintenance activities may damage or remove the fire protection. Additionally the protected surface itself can corrode beneath the fire protection. Procedures should be in place to ensure that both the passive fire protective systems and active systems are regularly inspected and repaired as appropriate.

As well as sprinklers what different fire systems can you identify which could degrade if they are not maintained and tested on a regular basis?

1.4.5 REVIEW

The primary purpose of performance review is to enable organizations to learn by experience and use the lessons learned to improve their performance. This section requires the evaluation of data from any fire policies, plans and risk assessments. Have objectives or targets been achieved and what new targets are needed. The options for remedial actions and improvements need to be considered. The reviews should be conducted regularly by managers at all levels in the organization and cover all aspects of fire safety performance. It is about learning from past events and fire incidents, ill-health data, errors. It may also include the results of benchmarking performance with others.

A review will also be undertaken following a fire, changes to the premises construction and facilities, new procedures, new equipment, new materials and changes in staff numbers and roles.

Auditing is the process of obtaining a systematic and independent view of the health and safety performance of an organisation. In the context of auditing, "independent" means independent of the line management being audited. As with reviews, audits should cover all aspects of health and safety performance in a structured way. They normally assess the company and its Fire Management against a set of predetermined standards. It should identify where standards are not being met and give advice and priorities for improvements.

1.5 FIRE SAFETY INFORMATION

There are a range of information sources which can assist those involved in managing fire safety within the workplace.

Communities and Local Government practical fire safety guidance

These are a series of guides which go through one or more specific workplace and give practical advice and guidance on the specific standards required for issues such as fire escapes, emergency lighting, and fire extinguishers. These can be used to find information on basic fire safety standards, completing a fire risk assessment, procedural and technical standards. They are only guidance but if followed they can very much assist in meeting the standards of the Order. We recommend you read through at least one of these guidance notes as they will provide a lot of information to support all six of the Nebosh Fire Certificate Elements.

HSE Approved Codes of Practice (ACOPS)

There are a small number of ACOPs, these accompany H&S statutory instruments and give assistance in meeting legal standards. There are no ACOPs specifically on fire safety but some issues covered by ACOPs may also impact on Fire Safety e.g. Storage of hazardous substances.

HSE Guidance notes

The Dangerous Substances and Explosive Atmospheres Regulations cover dangerous substances which include flammables, explosives and oxidisers. These regulations are supported by several guidance notes. The guidance notes are not legally enforceable but give technical assistance in meeting the statutory requirements.

Department of Health, Social Services and Public Safety guidance documents

The NHS has a range of technical guidance notes which assist the NHS in meeting the requirements of Fire Safety Legislation.

Manufacturers Documentation

This includes instruction manuals for plant and machinery and safety data sheets for hazardous substances.

The Office of the Public Sector Information

This provides data on legislation

British Standards for fire safety

There are a wide range of British standards with relevance to fire safety, they include the following:

BS 5266 Part 1: Emergency lighting – code of practice for the emergency lighting of premises.

BS 5839 Part 1: Fire detection and alarm system for buildings – code of practice for system design, installation and servicing

BS 5306 Part 1: Fire extinguishing installations and equipment on premises – fire hydrant system, hose reels and foam inlets.

BS 5306 Part 3: Code of practice for fire extinguishing installations and equipment on premises – Maintenance of portable fire extinguishers.

BS 5306 Part 8: Code of practice for fire extinguishing installations and equipment on premises – Selection and installation of portable fire extinguishers.

BS 9999: Code of practice for fire safety in the design, management and use of buildings.

PAS 79 : 2012 Fire Risk Assessment Guidance and Methodology

Institution of Fire Engineers

This is a registered charity working for societal benefit. Founded in 1918, the IFE assesses knowledge of fire and professional experience, awarding internationally recognised membership grades and fire-related qualifications. Through its Engineering Council licence as a Professional Engineering Institution (PEI), the IFE registers suitably qualified IFE members as Chartered Engineers (CEng), Incorporated Engineers (IEng) and Engineering Technicians (Eng Tech). Learning opportunities are worldwide within the IFE fire community and the IFE delivers over 6,000 fire-related exams each year which are required by many fire and rescue services for promotion both within the UK and internationally.

Fire Protection Association

The Fire Protection Association (FPA) is the UK's national fire safety organisation and is one of 28 similar national bodies worldwide. They work to identify and draw attention to the dangers of fire and the means by which the potential for loss is kept to a minimum. Formed in 1946 they have dealt with fire related research, consultancy, training, membership, publications, risk surveying and auditing. Their products and services are designed to assist fire, security and safety professionals achieve.

Building Regulations 2010

Approved document B Fire Safety, this document is divided into two volumes the second volume related to fire safety standards for workplaces when they are built. Part B contains the satisfactory means of giving warning and means of escape in case of fire; stopping the spread of fire over internal and external linings; ensuring the stability of buildings in the event of a fire; and to ensure satisfactory access for fire appliances to buildings and facilities within buildings other than dwellings and houses.

1.6 INVESTIGATING FIRES IN THE WORKPLACE

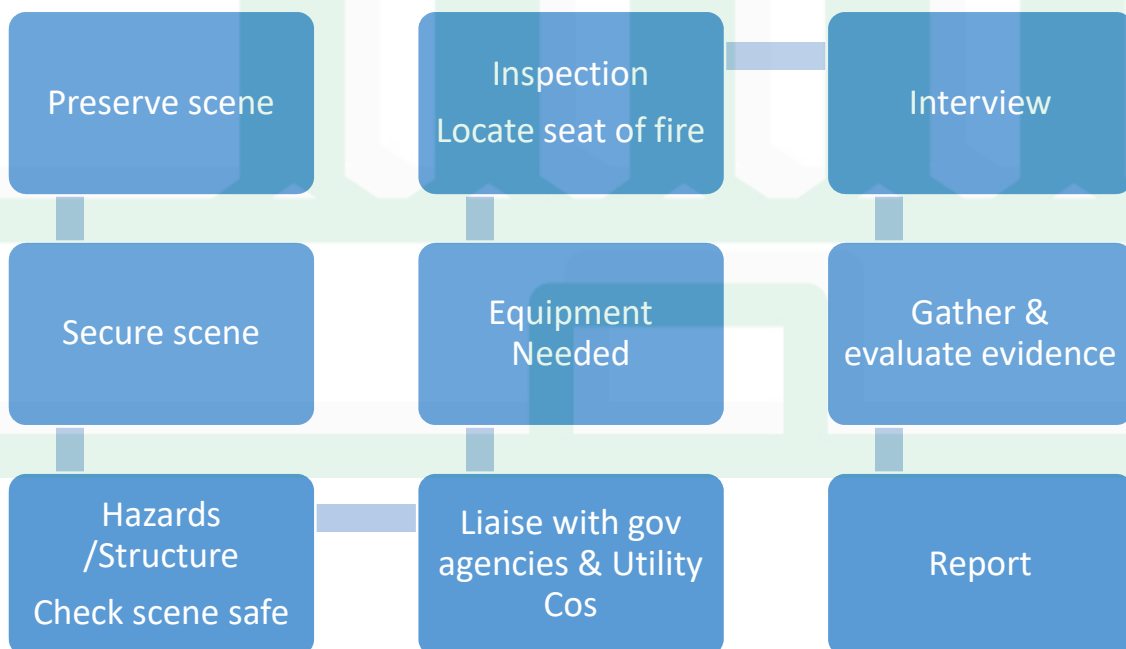
1.6.1 Purpose of investigating fires in the workplace

There are a variety of reasons for investigating fires and false alarms, in some cases these are similar to the reasons for investigating any accident or near miss.

- Legal requirement if an employee is injured (Social Security (Claims & Payments) 1979 - BS510)
- (RIDDOR) Reporting of injuries, diseases and dangerous occurrences regulations 2013
- Take action to prevent other fires or false alarms
- Make the workplace safer with less likelihood of fires or explosions occurring
- Demonstrate concern to employees that fire issues are taken seriously
- An investigation is conducted to determine how a fire started.
- Understanding the causes (root and immediate)
- Helps prevent future fires
- Helps determine if criminal acts were involved especially in arson cases
- Identify trends & patterns to focus control measures where the problems are occurring
- Reassure stakeholders
- Prevent more serious fire events and loss of life
- Prevent business disruption and loss

1.6.2 Basic fire-related investigation procedures

A range of specific technical issues will need to be examined. The basic principles of a fire investigation are very similar to those used for investigating any accident or incident. However there is more importance and significance on the preservation of the scene as this especially in real fires, this can provide the evidence needed to ascertain how the fire occurred and what its cause was. The area needs to be released by the Fire and Rescue authority before entry is undertaken.



Fire Investigation Stage by Stage

a. Preserve the scene

Arrangements need to be made to stop others entering the area, interfering with the scene or removing items from it. The type and depth of investigation will depend on a range of factors including the extent of the fire, the type of site involved. It may be that it is small fire involving an electrical component so not formal segregation is required, but it could a room needs to be isolated or in the case of a major fire the whole site or part of it may need to be quarantined.

b. Identify the Hazards and Risks Present

There are issues with the fire itself and the hazards it may have generated as well as the hazards which may have been present in the area prior to the fire. Fires may release toxic gases, smoke and dust, damaged walls may release asbestos fibres. There may be contaminated water on the floor where the fire has been fought. There may be coverings peeling from walls and even unstable building structures. Employees and fire officers need to be protected from any specific hazards.

c. Confirm Structure is Structurally Sound

The safety of the investigator must be maintained and access may not be permitted until the building has been verified as structurally sound. Access may need to be physically restricted to stop others accessing the area.

d. Services

Check that the services such as gas and electricity in the damaged area are isolated or safe.

e. Plant and Machinery

Any plant and machinery which is connected to those services also need to be isolated.

f. Lighting Provision

If the power is off then temporary lighting may be needed, if there are any flammable vapours this may need to be intrinsically safe or flameproof to avoid further fires or an explosion.

g. Personal Protective Equipment

Those entering the area may need a variety of PPE including coveralls, safety foot wear, hard hats and gloves.

h. Lone Working

Unless the fire is very minor anyone entering the damaged area would not be alone just in case another event were to occur.

i. Visual Inspection

- Look for specific site conditions after the fire, at the time of the fire and just before
- Evidence of how far and wide the fire has spread
- The effects of temperature on the building structure and its contents
- Evidence of burning at floor level – this could show a deliberate act is involved
- Evidence of multiple fires in one area – again this could be linked to a malicious arson event being involved.
- Evidence of any accelerants e.g. petrol or solvents – there may still be traces of smell
- Fire growth – this can be seen by the amount of soot in a given area.

- During the investigation the fire officer or investigator may need to take samples and debris which may need to be sent away for scientific analysis. Equally items of sentimental value may be gathered as well.
- Photos and videos may be taken to give a permanent record of what was seen and encountered

j. Emergency Procedures

Even though an emergency such as a fire has already occurred there need to be procedures or a plan in place if any problem arises whilst people are in the damaged area as it is likely that any fire alarms and other mitigation devices will have degraded to a point of not working.

k. Decontamination of PPE and People

Those coming out of the area may need to remove other clothing if it is contaminated, this may now be deemed to be hazardous waste. They may be dirty and need to shower or clean themselves.

l. Taking Witness Statements

- Put witness at ease
- Explain the purpose of the interview – to establish the facts not apportion blame
- Interview separately
- The aim is to obtain the facts, what they saw or what they didn't see, not their options!
- Quiet location – in private
- Make sure there are no interruptions
- Consider appropriate interview location
- Ask direct questions – “You saw that didn't you..”
- Ask one question at a time – no multiple questioning.
- Check your understanding of the points provided by the witness
- Endeavour to have facts corroborated
- Make notes of key points
- Where possible ask the witness to sign and date statements given

1.6.3 Fire Specifics To Look For

Disturbed in Built in Fire Protection

- May be encountered in fires involving industrial or commercial occupancies
- Look for damage or vandalism:
 - Sprinkler hook-ups
 - Hose cabinets
 - Hard-wired smoke detectors
 - High-rise communication systems

Delay in Notification of Fire

- Be alert for conditions that delay the fire department's ability to get to the fire:
 - Malfunctioning keys or key cards
 - Vandalized doors
 - Materials blocking access
 - Points of origin in the attic, the basement, or a closet

Tampered or Altered Equipment

- Document unusual conditions:

- Indications of forcible entry
- Altered electrical devices
- Use of excessive fuel

Fire Growth

- To determine the fire’s point of origin, the fire officer must understand fire behavior, growth, and development. Electronic equipment can be used to trace flammable vapors, these may be used by the fire service and by company insurers.

Once the site has been reviewed the immediate and root causes can be identified. In most situations there will be a range of individual factors as opposed to just one contributory factor.

Immediate causes tend to be associated with unsafe actions (these may be mistakes or violations) and unsafe conditions (over loaded electrical sockets). Root causes are associated with a lack of management control.

Example Fire Causes

Immediate Causes include:-	Root causes include:-
Spillage of solvent	Lack of fire risk assessment
Damaged lighting units	Poor employee awareness of fire issues thought lack of training
Employee smoking on site	No effective system for the control of contractors doing hot work
Arson	Lack of planned preventative maintenance
Clutter stored near heat source	Lack of enforcement of rules to prevent fires

Once the investigation stage has concluded a specialist cleaning company may be appointed. They may be seeking to not only clean but to deal with the damage to any sensitive equipment such as computers and other equipment.

1.6.4 Types of Different Fire Events



Deliberate fires are those which happen all too often from the malicious actions of a person who may be an employee or third party. Arson events can target empty and occupied buildings, waste bins are often a tempting proposition and vehicle fires are one of the more common fire events in the UK. Once the fire starts in a bin or vehicle it may often spread to adjacent properties and if undetected end in a large scale devastating fire. In the UK during dry periods fires starting in haystacks and other agricultural areas can often spread rapidly to the surrounding areas especially during a long hot summer.

Accidental fires are just that a fire occurs in the workplace but it does not result from any deliberate act. It may be from hot work and a spark from a hot process which ignites a nearby fuel sources.

False alarms are the largest category of fire events, these may be triggered by a sensor or device or even a person hitting a manual call point because they believe there is a fire. Alarms once triggered lead to fire evacuations which result in loss for the business. If the fire alarm is linked to a contact centre or the Fire Authority they may be called out to respond, this may mean that should a real fire occur at the same time that the emergency services are delayed in responding as they are dealing with the false alarm. Fire Alarm systems can degrade over time and stop working effectively, this is why it is so important that steps are taken check and maintain them so they do not degrade.

False alarms need to be investigated by the employer or building occupier, is it a sensor, detector or manual call point which has triggered the alarm. Is it accidental or deliberate? The immediate causes need to be tracked, unsafe action or unsafe condition. False alarms need to be taken as seriously as real fires. In the case of sensors and alarms being triggered a fire engineer may be needed to assist in the investigation as the system itself may need to upgraded repair or changed to ensure it is able to provide a reliable service.

False alarms should be noted in the fire log book so that trends and patterns can be identified. It may be one sensor which keeps tripping out or one alarm point which is the problem. These can then be remedied.

If unwanted alarms continue and the cause is not evident or remedial actions are unsuccessful, then it is useful to analyse the times at which unwanted alarms occur and the locations from which they originate. This will help to establish if there is any pattern that may help to identify the cause e.g. cooking prior to meal times or a boiler switching on early in the morning.

The investigations and the analysis should lead to a conclusion that the unwanted alarms are the result of one or more of the following causes:

Human error. It is likely that the problem can be overcome by a change of existing practices e.g. the issuing of 'permits to work' or the training of building occupiers Examples of this type of problems are:

- smoke caused by building contractors undertaking 'hot work' close to smoke or heat detectors
- alterations to the fire alarm system wiring without isolating the system

Process induced alarms. Many unwanted alarms result from processes undertaken adjacent to fire detectors, particularly smoke detectors. A well-known example being the result of burning toast in a toaster. Such unwanted alarms can be remedied by either changing the location of the offending process, changing the detector type or its location or by changing the way the fire alarm system is configured

Equipment faults. If there are equipment faults, these will need to be discussed with the fire alarm system maintainer and appropriate action taken to remedy them. Effective, regular

maintenance, which includes the internal and external cleaning of smoke detectors, will minimise such faults occurring in the first instance.

Malicious actuation. This cause can be the most difficult to determine and often requires careful analysis of the occurrences. Examples include:

- the malicious operation of break glass call points
- the illicit ownership and use of call point test keys
- the intentional directing of smoke, e.g. from a cigarette into a smoke detector

actuation of an unsecured control panel usually as a result of the control enable key being left in the panel.

All these factors need to be considered when building emergency plans are developed to avoid false alarms.

1.6.5. Liaison with others during the investigation

Depending on the severity of the fire event the investigation may be completed by the employer and a range of other professionals. In some cases the employer may have little choice but to accept the externally led investigation. Fire Authorities have the statutory right and power to examine into the causes of fire, including those in a workplace. If this is the case the employer must take steps to ensure that the site is not interfered with or tampered with in any way until the investigation is concluded. It is worth remembering that it is a criminal offence to interfere with a fire officer who is investigating a fire.

Fire Authority	They will take the lead on fire events and have a statutory duty to investigate fire incidents.
Health and Safety Executive	If the issue involves dangerous substances or construction sites the HSE may take the lead in the investigation
Police	The police may be involved if the fire is suspicious and suspected of being the result of a malicious act.
Coroner	The Coroner has the right to investigate into any fatalities so if the fire results in fatalities they will be involved. They are trying to determine the cause of the fatality.
Insurance Company	The insurer may wish to investigate and send their own investigator or loss adjuster to see the extent of the damage and if this is likely to be covered by the policy in place.
Forensic scientists	These individuals may be appointed by the fire authority or the police to assist in the evidence gathering and testing of any samples taken.
Engineers	Structural engineers may be involved to ascertain if the building is safe to enter and if it can be repaired or will need to be demolished
Environment Agency	If there is a fire which is likely to cause water, air or land pollution this will need to be reported to the Environment Agency to ensure that harm to the environment is minimised. Fire water if entering a river or stream could be devastating for the aquatic organisms, fire water could also potentially enter the public drinking water supply. The EA may provide equipment to minimise environmental harm and take direct action to prevent pollution.
Utility Companies	In the case of a major fire the gas, electricity or water supply might have been damaged or isolated.

1.6.6 Remedial actions to prevent recurrence.

Once a fire has been brought under control, extinguished and the area is released by the fire service the “Responsible Person” will need to ensure that steps are taken to clean up the area, rectify any issues identified during the investigation and notify employees of any business continuity plans. It may well be that others such as neighbours needed to be contacted after the event and a fire could have consequences for them, their property and businesses.

The measures which will be required to minimise or remove risk need to be considered by applying a hierarchy of risk control measures. This is the important part of every risk assessment as it is here where we are required to take action to reduce the risk of injury.

Article 10 of the RFR0 requires that the Principles of prevention must be applied.

Where the responsible person implements any preventive and protective measures, this should be done in accordance with the stated principles which emphasise the need to avoid risks and evaluate the risks that cannot be avoided.

Schedule 1 Principles of Prevention

The principles are—

- avoiding risks;
- evaluating the risks which cannot be avoided;
- combating the risks at source;
- adapting to technical progress;
- replacing the dangerous by the non-dangerous or less dangerous;
- developing a coherent overall prevention policy which covers technology, organisation of work and the influence of factors relating to the working environment;
- giving collective protective measures priority over individual protective measures; and
- giving appropriate instructions to employees.

This is by no means an exhaustive list as certain specific controls will be needed to suit certain work areas where a more **general hierarchy** may be used:-

- Elimination of the risk or hazard e.g. no smoking on site
- Substitution – replace flammable substances which non-flammable versions where possible – or replace an extremely flammable with one deemed flammable which still has a risk associated with it but it will be lower.
- Utilising engineering controls – fire detection systems
- Administration controls (including training and SSOW) this could include fire drills and fire signage
- Personal Protective Equipment (PPE)
- Discipline

1.7 RECORDING AND REPORTING REQUIREMENTS

Why report fire related events and accidents?

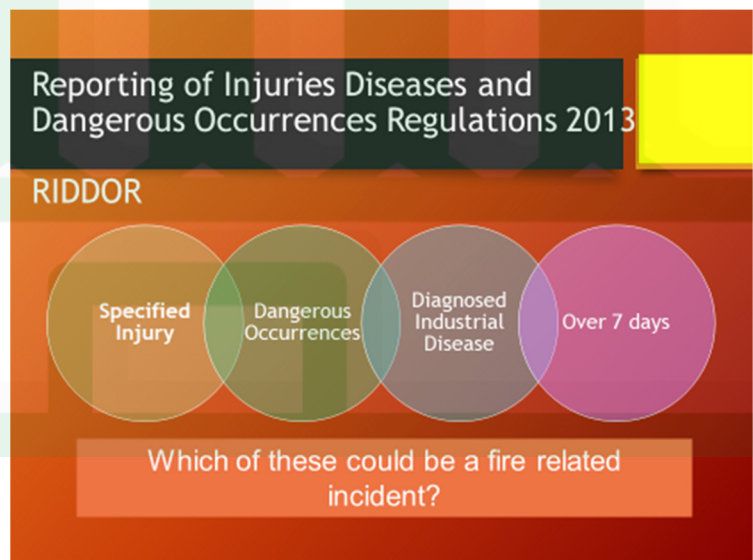
- Legal requirement if an employee is injured covered by the Social Security (Claims & Payments) 1979 - BS510
- Reporting of injuries, diseases and dangerous occurrences Regulations 2013
- Take action to prevent other false alarms and fires
- Make the workplace safer
- Demonstrate concern to employees

Fire related issues need to be recorded the exact recording system in place may vary company to company, but typical records will include:

- Accident book – for reporting work related injuries which have resulted from fire events - Accident reports (where there have been injuries)
- Near misses or incidents (this may include false alarms)
- Fire log books
- Fault logs for machinery or alarm systems
- Hazard spotting reports
- Non-conformance reports (this is the name given when there is a formal accredited management system which is found not to be working in all areas)
- Risk assessment
- Types / location / maintenance of extinguishers
- Record of Any fires
- Workplace inspections
- Training records
- Electrical maintenance records
- Building plans / Drainage plans
- Fire procedures / evacuations etc.

1.7.1 THE REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS 2013 (RIDDOR)

These regulations require employers to report certain accidents and injuries to the Incident Contact Centre (ICC). The ICC must be contacted by telephone if there is a workplace fatality or major injury, but all other incidents must be reported by the online reporting system via www.hse.gov.uk/riddor. Every company must appoint a “responsible person” who will report any reportable injuries, a deputy will be appointed when they are unavailable. When deciding if the accident that led to the death or injury is work-related, the key issues to consider are whether the accident was related to:



- the way in which the work was carried out;
- any machinery, plant, substances or equipment used for work; and
- the condition of the site or premises where the accident happened.

The main requirements of reporting include:

1. Fatalities
2. Specified Injuries
3. Workplace accidents which involve over seven days off work (or away from normal activities)
4. Dangerous Occurrences (certain specified high-risk, near misses)
5. Diagnosed Industrial Diseases – not normally fire related
6. Accident Related Deaths – within a year of an accident or event

Fatalities -

All deaths to workers and non-workers, with the exception of suicides, must be reported if they arise from a work-related accident, including an act of physical violence to a worker. This could include a workplace fire.

- The nominated person must report this **immediately by the quickest practicable means** (telephone, or online) to the Incident Contact Centre 0845 300 9923. www.hse.gov.uk/riddor.

Specified Injuries

- There are a small number of named serious injuries which if they involve an employee or worker on your site are reportable to the Incident Contact Centre.
- These must be reported immediately by the quickest practicable means (telephone, or online) to the Incident Contact Centre 0845 300 9923. www.hse.gov.uk/riddor.

Example specified injuries (which could be caused by a fire or explosion)

- a fracture, other than to fingers, thumbs and toes;
- amputation of an arm, hand, finger, thumb, leg, foot or toe;
- permanent loss of sight or reduction of sight;
- crush injuries leading to internal organ damage;
- serious burns (covering more than 10% of the body, or damaging the eyes, respiratory system or other vital organs);
- unconsciousness caused by head injury or asphyxia;
- any other injury arising from working in an enclosed space, which leads to hypothermia, heat-induced illness or requires resuscitation or admittance to hospital for more than 24 hours.

Workplace accidents which involve over seven days off work

These involve any accident involving a member of staff or a contractor which results in absence from work or inability to perform normal duties for seven days or more. If an individual continues to work following the accident but is subsequently absent for seven days or more due to the accident, it is still classified as an over seven day injury. The seven days excludes the day of the accident, so if an accident occurs on a Wednesday, it would become reportable if the injured party was not fit for work on the Thursday of the following week.

This must be reported via the F2508 form online via www.hse.gov.uk/riddor within 15 days of the accident occurring.

Dangerous Occurrences

Dangerous occurrences are high risk near misses. Not all such events require reporting to the HSE but they must be reported if they appear on the RIDDOR dangerous occurrences list. Reporting is via the online reporting system and must be completed as soon as practicable.

There are 27 categories of dangerous occurrences that are relevant to most workplaces, those which could lead to a fire or be associated with a fire event are given below. For a full list check the HSE web site or the statutory instrument.

- Pressure system - failure of closed vessel or pipe work this may be a container

1.7.3 EXAMPLE FIRE LOG BOOK CONTENTS

- containing LPG which explodes.
- Plant or equipment coming into contact with overhead power lines; This can sometimes lead to a vehicle or fire nearby
- Electrical incidents causing an explosion – any explosion or fire cause by electrical short circuits or overload which leads to a stoppage of plant for 24 hours or causes a significant risk of death.
- Explosives – fire, explosion or ignition where explosives are stored or made
- Breathing apparatus – failure of breathing apparatus – this is sometimes worn by fire fighters and if it were to fail it presents a significant risk
- the accidental release of any substance which could cause injury to any person

1.7.2 Fire logbook

The Regulatory Reform (Fire Safety) Order 2005 (FSO) requires that the 'responsible person' for premises should ensure that all fire safety facilities, equipment and devices are maintained in efficient working order and in good repair. A simple fire safety log book assists the responsible person in co-ordinating and maintaining a fire safety record keeping system.

This fire safety logbook will also enable building owners, managers and other responsible persons to demonstrate their commitment to fire safety legislation, which in turn will support any business continuity plan.

It is recommended that it should be kept in a loose leaf format with new record keeping pages photocopied or downloaded as and when required. The logbook should be kept up to date and readily accessible for audit by the enforcing authority when required.

In terms of maintaining records it is important to take note of the following legal requirements;

'It is an offence to make in any register, book, notice or other document required to be kept, served or given by or under, this Order, an entry which he knows to be false...'

Though there is not direct requirement to keep maintenance records within the Fire Safety Order the responsible person is required to record significant findings when carrying out the fire risk assessment.

The installation of an automatic fire alarm system or the need for emergency lighting would be deemed as significant and the British Standards which covers the installation, testing and maintenance of this equipment clearly states records should be kept.

Section	Description
1.	RECORD OF FIRE INCIDENTS
2.	PROVISION OF BASIC FIRE SAFETY INFORMATION AND INSTRUCTIONS TO NEW STAFF ON FIRST DAY AT WORK
3.	PROVISION OF FIRE SAFETY INSTRUCTION TO INDIVIDUAL STAFF MEMBER
4.	FIRE SAETY TRAINING SESSIONS FOR STAFF
5.	FIRE DRILL RECORD
6.	INSPECTION OF INTERNAL AND EXTERNAL MEANS OF ESCAPE
7.	EMERGENCY LIGHTING SYSTEM: REGISTER OF LUMINAIRES
8.	MERGENCY LIGHTING: ROUTINE (MONTHLY AND 6 MONTHLY) CHECKS
9.	EMERGENCY LIGHTING: MAINTENANCE CONTRACTOR RECORD
10.	EMERGENCY LIGHTING: ANNUAL AND 3-YEARLY MAINTENANCE BY CONTRACTORS
11.	AUTOMATIC FIRE DETECTION AND ALARM INSTALLATION BASIC DESCRIPTION
12.	AUTOMATIC FIRE DERECTION AND ALARM INSTALLATION: WEEKLY INSPCTION AND TESTS
13.	AUTOMATIC FIRE DETECTION AND ALARM INSTALLATION: QUARTERLY TESTS
14.	AUTOMATIC FIRE DETECTION AND ALARM INSTALLATION: ANNUAL MAINTENANCE BY CONTRACTORS
15.	PORTABLE FIRE EXTINGUISHERS: INVENTORY
16.	PORTABLE FIRE EXTINGUISHERS: MONTHLY CHECK
17.	PORTABLE FIRE EXTINGUISHERS: ANNUAL INSPECTION/MAINTENANCE
18.	FIRE BLANKETS: LOCATION AND INVENTORY
19.	FIRE BLANKETS: ANNUAL MAINTENANCE RECORD
20.	PORTABLE FIRE EXTINGUISHERS AND FIRE BLANKETS : MAINTENANCE CONTRACTOR RECORD
21.	FIXED FIRE EXTINGUISHING INSTALLATION: INVENTORY
22.	FIXED FIRE EXTINGUISHING INSTALLATION: WEEKLY CHECK
23.	FIXED FIRE EXTINGUISHING INSTALLATION: MAINTENANCE CONTRACTOR RECORD
24.	FIRE MARSHAL LOG
25.	SPRINKLER SYSTEM CHECKS
26.	FIRE DOOR INSPECTION AND OPERATION CHECKS

1.7.4 Fire Risk Assessments

The employer must carry out a fire risk assessment and decide what fire reduction measures are required. This follows very similar principles to that of a general risk assessment as required by the Management of Health & Safety at Work Regulations. This requirement has been reinforced by the Regulatory Reform (Fire Safety) Order 2005.

Fire authorities continue to offer advice to ensure employers are able to discharge their responsibilities and a series of fire guides are available to help the employer.

Hazard Identification: Consider the hazards which cause a fire to start, the features of the building and its use which may increase the risk of fire spreading and the storage of combustibles.

Who is at risk? How many people use the building, are there any young people or those who would have difficulty evacuating without assistance? Do people sleep on the premises?

Existing controls: Identify the current fire prevention and fire protection measures which are in place and working e.g. fire extinguishers, fire doors etc.



Fire safety risk assessment	
1	Identify fire hazards Identify: <ul style="list-style-type: none">• sources of ignition;• sources of fuel; and• sources of oxygen.
2	Identify people at risk Identify: <ul style="list-style-type: none">• people in and around the premises; and• people who are especially at risk.
3	Evaluate, remove or reduce, and protect from risk <ul style="list-style-type: none">• Evaluate the risk of a fire starting.• Evaluate the risk to people from a fire.• Remove or reduce fire hazards.• Remove or reduce the risks to people from a fire.• Protect people by providing fire precautions.
4	Record, plan, inform, instruct, and train <ul style="list-style-type: none">• Record any major findings and action you have taken.• Discuss and work with other responsible people.• Prepare an emergency plan.• Inform and instruct relevant people.• Provide training.
5	Review <ul style="list-style-type: none">• Review your fire-risk assessment regularly.• Make changes where necessary.
Remember to review your fire-risk assessment regularly.	

Evaluation: Evaluate the fire risk based on the hazards and existing controls, this can be done for each department, building, site or from each hazard.

Remove, reduce and protect: Identify any additional control measures which need to be taken to reduce the fire risk further.

Review: If there are any fire events or significant changes this may lead to the risk assessment needing to be updated or amended.

The fire risk assessment process is covered in more detail in Element 6.