

CREATING PROFIT PREVENTING LOSS

Loss Prevention should be a major element of a company's strategy to minimise business risk and ensure business continuity. In the context of corporate governance a strong focus on health and safety protects a business from potentially damaging losses and positively supports the drive for further growth and profit generation.

A major cause of business loss is fire. Approximately one in three businesses do not recover from a serious fire. The purpose of this article is to discuss recent significant changes in fire and explosion legislation. While the main purpose of the legislation is to protect life; complying with your statutory duties makes good business sense.

Regulatory Reform (Fire Safety) Order 2005

The new Regulatory Reform (Fire Safety) Order 2005 (Fire Order) came into force in England and Wales on 1 October 2006, and existing fire certificates lost their legal status on that day. The Fire Order applies to most non-domestic premises.

Historically, a tombstone approach has been used to develop fire safety legislation, with new regulations and acts being introduced following tragic events. The Factories Act 1961 was introduced in response to a fire in a mill that killed eight people. Further fire legislation followed: for shops, offices and railways after a fire in a shop left 11 dead; for licensed premises after a fire in a club killed 19; and for sports facilities after the Bradford Football Club fire resulted in 58 fatalities. Rather than fire legislation being driven by past tragedies, the Fire Order requires operators to review its activities and assess all credible fire scenarios.

The Fire Order has been introduced to meet the demands of modern society. Present fire safety rules are fragmented across more than 100 pieces of legislation. To streamline fire legislation, the Fire Order repeals and revokes most fire acts and regulations (e.g. the Fire Precautions Act 1971 and the Fire Precautions (Workplace) (Amendment) Regulations 1999). In line with most safety legislation, the Fire Order requires a suitable risk assessment to be carried out by a competent person. The aim is to move away from the old 'static' fire certification method towards a more dynamic risk-assessed approach. No longer are fire certificates to be obtained from the fire service (and perhaps filed away to be forgotten) but operators are to carry out their own risk assessments and to keep the assessments live and up to date. This requires assessments to be reviewed regularly and also when significant changes occur. Whereas fire certificates applied to buildings only, fire risk assessments must now cover all site operations.

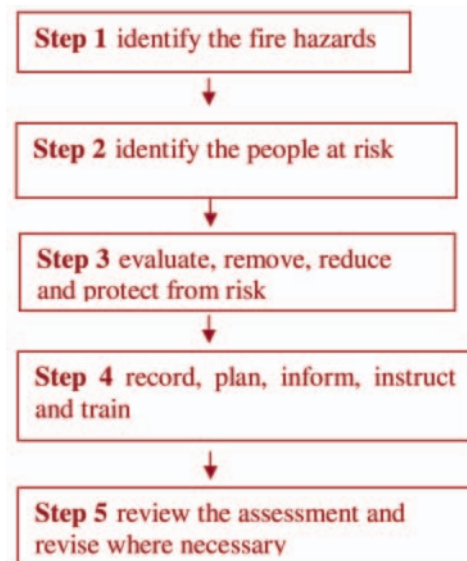
Instead of issuing certificates, fire services will now be entering premises and asking to see the fire risk assessment. If they are not satisfied, then they can issue enforcement notices demanding improvements or, if they consider the premises to be too hazardous, immediately stop

the facility from operating by issuing a prohibition notice.

The "responsible person" - that is, whoever at the company is ultimately responsible for fire safety - must ensure the objectives of the Fire Order are met. To this end, where necessary, fire precautions must be employed to safeguard the lives of all "relevant people". That is people who are lawfully on, or nearby, the premises, but does not include, for example, burglars or trespassers. While under safety legislation, the responsible person has a duty of care to people such as burglars (eg mantraps cannot be set) there is not a requirement to safeguard them from the risk of fire. If an arsonist sets fire to a building and then finds the exit doors locked, that's his lookout. Nor does the term "relevant people" apply to firefighters fighting a fire; they will carry out their own dynamic risk assessment before tackling a fire.

For guidance, the government has published 11 detailed booklets relating to a wide range of establishments and these can be downloaded for free at www.firesafetyguides.communities.gov.uk. Of particular relevance to the process industry is the guidance booklet on factories and warehouses.

The fire guidance lays out the required five steps to complete a risk assessment.



The Fire Order adopts a hierarchical approach and to this end appropriate fire prevention controls should be considered before deciding what fire protection measures are required. It is surely better to prevent the onset of a fire than to accept a high likelihood of a fire occurring just because there are adequate fire protection measures in place. Fire protection measures do not always work on demand. For example, this

occurred in November 2005, when a fire destroyed a huge distribution centre. When the fire started, ongoing maintenance meant that there was no water supply to the centre's sprinkler system when required. Where possible, a fire hazard should be eliminated, e.g. by replacing a flammable solvent-based substance with a water-based solvent. Where elimination is not possible, the fire risk should be reduced, for example by replacing highly-flammable substances with substances that are so readily combustible. It is only when the preventive measures and residual fire risk are evaluated that the appropriate level of fire protection can be determined. The level of protection should be proportionate to the residual risk and should reduce the level of risk to "as low as reasonably practicable" (ALARP).

One way to assess if the site's safeguards are reasonable is to benchmark against other similar sites and to reference relevant industrial guidance and standards. As an insurance requirement, many premises have additional fire protection measures (which may or may not also protect life) to protect the building and contents. When carrying out a fire risk assessment, it is important to identify which measures are for life safety, so that these measures can be assessed and evaluated to demonstrate whether the ALARP criteria are met.

Companies are not expected to bankrupt themselves in an attempt to achieve the panacea of absolute safety but should apply the "grossly disproportionate" test. That is to say, risk measures should be employed until the cost in terms of time, money and effort are grossly disproportionate to any further reduction in risk gained. Where sites have characteristics outside standard fire guidelines, fire-engineering solutions will be required. Should the enforcing authority disagree on the technical solution to be used, the Fire Order allows for the dispute to be settled by an independent arbitrator.

The Fire Order requires a competent person to carry out a suitable risk assessment. This raises the question: "How do I know if I am competent?" Perhaps if one needs to ask such a question, that is answer enough!

Dangerous Substances and Explosive Atmospheres Regulations / ATEX

In December 2002 the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) came into force. These regulations implement the EC Directive 1999/92/EC (also known as ATEX 137). ATEX 137 is a social

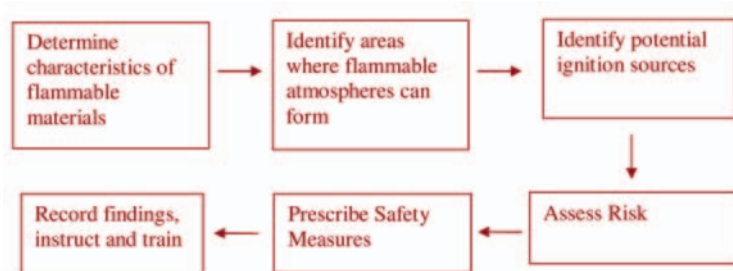
directive, placing formal duties on owners of workplaces to ensure that activities there present minimal risk to people in respect of potential fire and explosion hazards.

For most companies interest in DSEAR stems from the need to handle and process flammable materials (e.g. flammable gases, liquids, mists and dusts). For processes handling such materials DSEAR require the operator of the workplace to evaluate how, where, and why, 'explosive' atmospheres could arise in the workplace, and to demonstrate that suitable and sufficient controls are in place to minimise the risk from explosive atmospheres to people who may be present in that workplace.

DSEAR involve three key elements:

- (i) a risk assessment to identify and evaluate potential hazards from explosive atmospheres,
- (ii) a formal area classification study to define where, and how often, explosive atmospheres can arise and to define 'hazardous' areas accordingly,
- (iii) demonstration that suitable safety management systems are in place to reliably control the potential hazards from explosive atmospheres.

Under DSEAR the owners of workplaces have a duty to assess the operations involving flammable materials in their workplaces with a view to confirming that risk to people, from explosive atmospheres, is acceptable. The approach for the required risk assessment is illustrated below.



From the risk assessment, an appropriate "basis of safety" is defined for storage areas and each item of equipment, or stage of a process, handling flammable, combustible or other dangerous materials.

The "basis of safety" is defined as the fundamental safety philosophy which ensures that an item of equipment can be operated, or an operation can be performed, in a safe manner with risks that are as low as reasonably practical. For operations handling either flammable or

combustible materials, definition of the most appropriate "basis of safety" will involve

- preventive measures

and / or

- protective measures.

Preventive measures, such as the avoidance of a flammable atmosphere or elimination of ignition sources, prevent the initiation of a fire or explosion. They offer the advantage that no account need be taken of the potential consequences, e.g. the violence of the explosion. They can obviate the need for protective measures, e.g. explosion vents, suppression equipment, etc.

However, where the consequences of a fire or explosion would be severe, or where preventive measures are not viable or reliable, it is necessary to base safety on protective measures. Safety systems based on protection measures accept that the initiation of an explosion is possible, but aim to control (mitigate) the consequences in such a manner that injury to personnel is prevented and damage to equipment is controlled to an acceptable level.

DSEAR makes area classification mandatory for workplaces where dangerous substances are used. Where, as the result of an assessment, hazardous areas are identified the owner of the workplace must give consideration to the displaying of suitable signs to indicate the existence of these hazardous areas. In most cases this will involve displaying a triangular sign with the letters 'EX' displayed on a yellow background with a black border. Such signs

would, typically, be displayed at entrances to sections of the factory that contain hazardous areas. In addition, it will be appropriate for workplace owners to prepare area classification drawings, in the form of layout and, where beneficial, elevation plans with the extents of defined hazardous areas marked on them.

Having identified hazardous areas, operators must ensure the equipment in these areas is suitability protected. The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 1996 (EPS) brings into force the requirements of a second European ATEX Directive (94/9/EC - also known as ATEX 100). This relates to the requirements on design, installation and

maintenance of equipment that is supplied for use in areas where explosive atmospheres could arise.

There must be a suitable safety management system to ensure that controls are reliably maintained. The Management of Health and Safety at Work Regulations 1999 (MHSW), the ATEX 137 Directive, DSEAR and the Fire Order all place clear requirements on process operators to have an effective safety management system in place. The control measures identified by a hazard identification and risk assessment exercise will be a combination of both physical and procedural measures. The effectiveness of hardware control systems can be severely compromised by a failure to operate and / or maintain them correctly. To ensure operations are as required, procedures such as those listed below should be in place:

- standard operating procedures including start-up and shut-down,
- operator training procedures,
- maintenance procedures,
- permit to work,
- control of contactors,
- management of change procedures,
- emergency procedures.

This article shows for operators to comply with their statutory duty, they must carry out suitable and sufficient risk assessments and have adequate controls to prevent and protect against fire and explosion hazards. Such assessments also make good business sense; loss prevention is critical to the near and long term profitability of any organisation. To ensure a coordinated approach, it may be appropriate to carry out your DSEAR and Fire Order assessments in a single exercise.

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