

# Fire hazard

A little time and effort invested now could go a very, very long way towards preventing a disaster on any site. Martyn Grant examines the requirements, in light of experience



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**F**ire in an engineering environment is likely to have far more serious consequences than in almost any other industrial premises.

Why? Because there are likely to be flammable liquids, both stored and in use, gas cylinders for welding and cutting, as well as combustible materials, including cardboard and polystyrene packaging. And there will be sources of ignition, such as electrical appliances, hot work and grinding processes.

So fire should be right up there on the agenda of engineering workshop managers, because, unlike most other safety issues, fire has the potential to injure and kill large numbers of people very rapidly. In 2004, the English and Welsh fire and rescue services attended some 33,400 fires in workplaces: 38 people died and around 1,300 were injured. Fire also usually results in significant damage. Annual costs are conservatively estimated at £2.5 billion in the UK and many small to medium sized businesses fail, following a fire.

Common causes of fire include:

- Faulty and/or damaged electrical wiring and portable appliances
- Arson, which is becoming an increasing problem
- Poor equipment maintenance and blocked ventilation ports on machinery and/or equipment, leading to overheating
- Inappropriate storage for flammable goods, gas cylinders and other combustibles

- Inadequate control measures for hot working – for example, welding and cutting operations
- Smoking in prohibited areas and/or careless disposal of cigarettes and matches.

## Specific risks

Of these, the highest risks come from flammable liquids and gas cylinders. Looking at the former, petrol, solvents and the like are extremely volatile and their vapours are, in many cases, also heavier than air. This means that they collect in low-lying areas, such as inspection pits and cellar storage areas, and even a small spark will produce explosive results.

Ensuring that arrangements for storage and use are adequate clearly reduces what can be a serious risk. Key points are to use fire-resisting cabinets or bins, designed to hold up to 50 litres and to contain leaks, and to restrict quantities on the shop floor to no more than daily usage requirements. Beyond that, keep sources of ignition away from areas where flammable liquids and/or concentrations of vapours may be present, and ensure good workplace ventilation. Advice and guidance is available free at:

<http://www.hse.gov.uk/PUBNS/indg227.pdf>

As for gas cylinders, the greatest risk comes from acetylene, with the London Fire Brigade alone attending at least one incident every week, involving acetylene cylinders. The real problem is acetylene's instability: heating and/or mechanical shock to the cylinders can both result in a significant explosion.

Firefighters in Hammersmith, for example, had to evacuate 300 people from the area surrounding a workshop blaze in February last year, and a 200m hazard zone was in force for 24 hours. And at Dagenham in 2004, an 80kg cylinder exploded during a workshop fire, resulting in the cylinder rocketing 150m into the air and landing on the roof of a nearby house.

Risk should be minimised by restricting the amount of gas stored to meet immediate needs only. Also, all LPG cylinders should be stored separately from other flammable materials in a safe, secure, properly constructed and ventilated location. More information is available at:

<http://www.hse.gov.uk/pubns/indg327.pdf> and <http://www.hse.gov.uk/PUBNS/chis5.pdf> 

## Legislation update

New legislation – the Regulatory Reform (Fire Safety) Order 2005 – was enacted in October last year to rationalise the numerous existing acts and regulations dealing with fire safety. The aim was to simplify requirements and make compliance more straightforward. But a recent survey revealed that only 62% of employers are aware of the new legislation and its requirement to carry out fire risk assessments.

In fact, that was one of the main changes: discontinuing the building fire certificates regime and moving to risk-based management, in line with other areas of health and safety.

All employers now have a legal obligation to ensure that a fire risk assessment is carried out in respect of their premises – although 36% so far have failed to do so.

That must: identify all fire hazards and people at risk; introduce appropriate control measures to minimise the likelihood of fire; and reduce the potential effects of any fire that does occur.

Detailed information and guidance can be accessed free via:

[www.firesafetyguides.communities.gov.uk](http://www.firesafetyguides.communities.gov.uk)