

# College/university risk review

Large loss fires in educational premises are examined this month by **Adair Lewis**, who homes in on the tertiary education sector, bringing good and bad news

**T**HIS SURVEY covers the period from January 2009 until December 2014, during which time there were 121 large loss fires in the education sector. The good news is that over the last couple of years, the overall proportion of large loss fires in the education sector has decreased from 6.3% to 3.2%. Sadly, the bad news is that college and university fires now account for 32.2% of those in the education sector, whereas previously it was 30.9%.

As to the causes of the fires, both the deliberate and unknown elements appear to be decreasing, with accidental causes now accounting for 56.5% of the fires. This is reflected in the fires occurring in the hours of darkness (interpreted as 18:00 – 06:00), having decreased in total from over 70% to 54%. Deliberate fire setting is therefore less prevalent than hitherto.

In only three of the 39 large loss fires were any difficulties encountered by the fire and rescue service on their arrival. In two cases there were problems with access and on another occasion there was inadequate firefighting water in the locality. Access difficulties almost always relate to parking problems with thoughtless parking on emergency service access routes.

The average large loss fire in college and university premises cost £1,552,263, compared with an average loss of £1,345,012 for education premises as a whole. This represents £1,183.71 per m<sup>2</sup> of damage. Although these are huge sums of money, it must be remembered that tertiary education premises are large complex buildings incorporating a wide range of often high tech facilities. Schools tend to be much simpler buildings, often consisting mainly of groups of classrooms.

A fire risk assessment should be undertaken for college and university premises in compliance with the Regulatory Reform (Fire Safety) Regulations 2005 (or equivalent legislation in Scotland and Northern Ireland). In some parts of the campus (eg science and

engineering faculties), an assessment will also need to be undertaken in compliance with the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002.

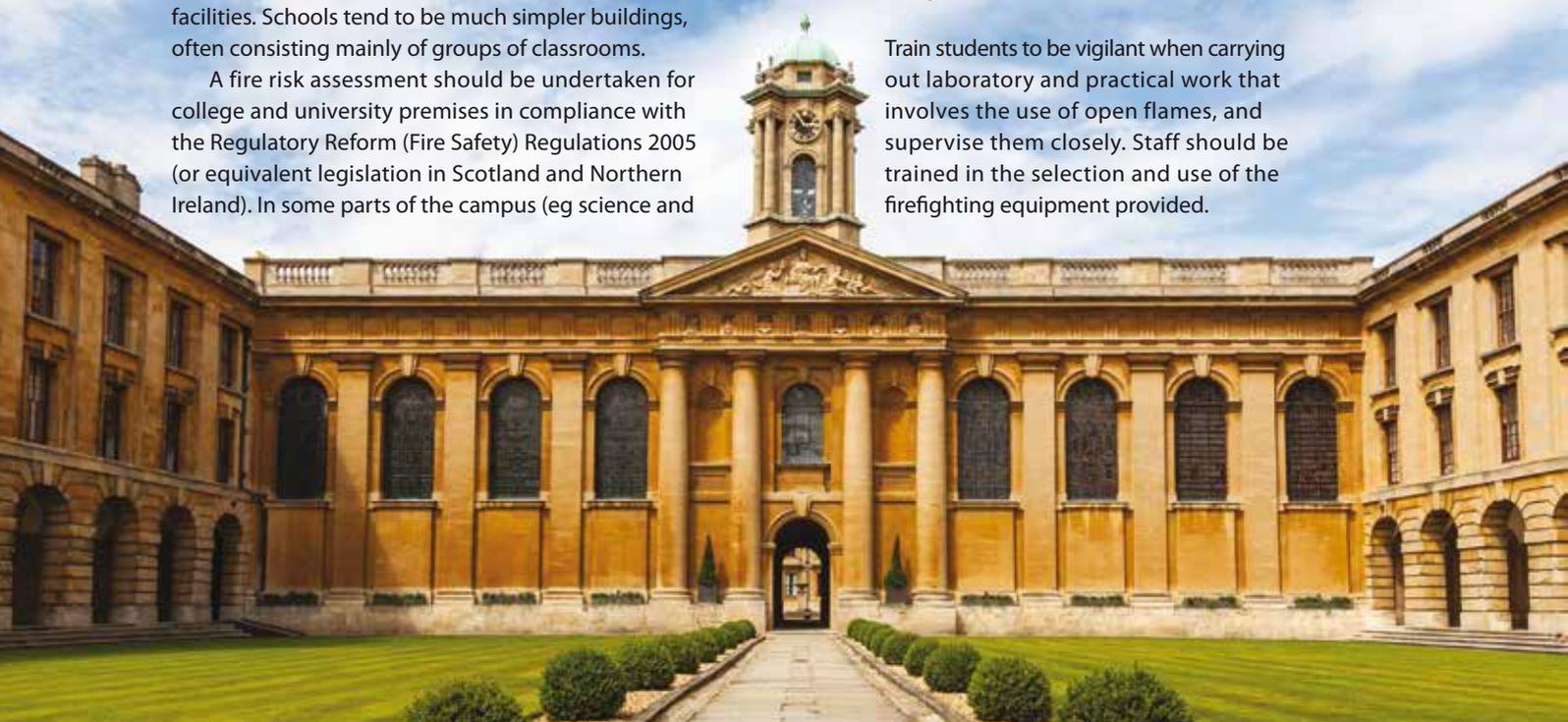
## Fire hazards

In addition to the potential ignition sources in commercial undertakings, there are hazards associated with the teaching and recreational activities in college and university campuses, including:

- open flames used in laboratories
- welding and cutting equipment in engineering and art workshops
- hot work and the use of hand tools by maintenance staff and contractors
- heating processes using ovens, furnaces and kilns
- explosions occurring as a result of the release of flammable vapours
- accidental release of flammable gas while using compressed gas cylinders
- electrical hazards from poorly maintained electrical equipment and installations
- chemical reactions during laboratory processes that may lead to unplanned self heating and ignition
- cooking activities in catering colleges, refectories and student halls of residence
- deliberate fire setting and mischievous student behaviour

## Addressing the problems

Train students to be vigilant when carrying out laboratory and practical work that involves the use of open flames, and supervise them closely. Staff should be trained in the selection and use of the firefighting equipment provided.



**Sector Main Category: Education**  
**Sub Category: College/University**

**Period: Jan 2009 to Dec 2014**

During the survey period, education fires accounted for 3.2% of all large loss fires. There were 121 large loss fires in the education sector, 39 of which were in college/university premises. Fires in college/university premises accounted for 1.2% of all large loss fires and 32.2% of all education fires.

Cause	Accidental	Deliberate	Unknown / unassigned
Education	47.1%	28.9%	23.9%
College/University	56.5%	18.0%	25.5%

Time of day	00:00 - 06:00	06:00 - 12:00	12:00 - 18:00	18:00 - 00:00	Unknown
Education	22.3%	14.8%	22.3%	24.0%	16.5%
College/University	15.5%	12.7%	20.5%	38.5%	12.7%

Impedances	Total	Access	Acetylene	Inadequate water	Resources
Education	15	60.0%	0.0%	26.7%	13.3%
College/University	3	1.7%	0.0%	0.8%	0.0%

Eliminate hot work by maintenance staff and contractors wherever possible. When such work is necessary, a hot work permit system should be used.

As far as is practicable, eliminate the use of acetylene. Use other forms of welding and cutting where possible and minimise the use of laboratory equipment that routinely requires the use of acetylene. Keep the number of acetylene cylinders held on the site to a minimum.

Ensure that staff using ovens, kilns and similar facilities are trained to use them correctly and to work within the parameters stated in the college/university operating procedures.

Only introduce into the teaching areas the volumes of flammable liquids necessary for the work period. Bulk supplies of flammable liquids should be stored securely in a purpose designed facility, preferably outside the building. Staff should be trained in the actions to take should a spillage of flammable liquid occur.

Store all gas cylinders in prominently signed facilities designed for this purpose. Engage competent engineers to maintain demonstration and teaching equipment in accordance with the manufacturers' instructions.

A competent electrician should be engaged to inspect the installed electrical wiring, in accordance with the requirements of BS 7671, at periods determined by a risk assessment. Record the results.

Carry out in-service inspection and testing of portable electrical equipment ('PAT testing') at periods in accordance with HS(G)107 and the IET Code of Practice for In-service Inspection and Testing of Electrical Equipment, or more frequently as determined by a risk assessment.

There should also be a requirement for students' personal items of portable electrical equipment (including phone and laptop chargers) to be subject to periodic inspection.

Clear guidance should be provided to students in halls of residence on the forms of cooking that are permitted. Appropriate facilities should be provided and inspected regularly.

Appropriate passive fire protection measures must be in place to minimise the risk of fire spreading between

compartments within the building – from the building to adjacent premises, or vice versa. In particular laboratories, and engineering and kitchen facilities, should be located in separate fire compartments. Fire doors in halls of residence should not be wedged open.

Protect the premises by installing an automatic fire detection and alarm system (designed to an appropriate category as defined in BS 5839-1), which is monitored by on-site security staff or by an alarm receiving centre when the premises is unoccupied.

In new buildings, consider installing an automatic sprinkler system designed in accordance with the Sprinkler Rules incorporating BS EN 12845, in order to control a fire until the arrival of the fire and rescue service. Suitable fixed fire suppression systems should also be installed to protect deep fat fryers, grills and similar equipment in refectory kitchens. Consider installing suitable fixed fire suppression systems in large IT facilities.

Where appropriate, liaise with the local fire and rescue service to ensure the adequacy of water supplies in the area for the sprinkler installation (where installed) and for firefighting purposes.

Access to all relevant areas of the site must be readily available to the fire and rescue service on their arrival, as must staff during working hours to direct firefighters to the relevant area. Parking should be controlled to ensure that roads and turning circles on the campus are kept clear for emergency vehicles.

Give careful consideration to the likelihood of arson and the implementation of suitable security measures to reduce the occurrence of deliberate fire raising at the time of the fire risk assessment.

To ensure the resilience of the university or college functions, have an effective emergency plan in place. One approach is to complete the ROBUST business continuity and incident management planning software, available free from <https://robust.riscauthority.co.uk/> ■

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*These statistics are based on information supplied by loss adjusters to the FPA on a voluntary basis and not all insurers conducting business in the UK contribute to this dataset. They represent only sums paid out where the total loss is in excess of £100k and are deficient of losses under £100k, deductibles, underinsurance, uninsured, self-insured and captively insured components, which may be significant. In a year, total losses captured typically account for 50% of the ABI declared annual fire loss figure – which is similarly deficient of the same components (except the £100k threshold).*