

Barns risk review

This time, **Adair Lewis** turns the spotlight on statistics for an agricultural business sector experiencing large losses – barns of traditional construction

WHILE MANY old barns of traditional construction have been converted into expensive homes that are showpieces of contemporary interior design, others together with barns of more modern and perhaps more industrial design, remain in use for their intended purpose. By definition, a barn is a covered building for the storage of grain, hay and other farming products and machinery; and thus the contents normally represent a high fire load. Statistics reveal that the high fire load is reflected in the magnitude of losses, with barn fires accounting for 39.5% of all large loss fires in permanent agricultural structures and averaging more than £274,000 per fire.

The fire load may be high, but there tends to be a limited range of potential sources of ignition in these structures. Amongst these is deliberate fire setting, but this is no more prevalent in barns than other forms of workplace, with just 22% of the fires being the result of arson. However, there is no real satisfaction to be gained from this figure as nearly 44% of the fires are recorded as being of 'unknown' origin. The difficulty in determining the cause of these incidents is probably associated with the involvement of the large quantities of combustible materials that are present; the resulting scale of the damage in a proportion of cases masking the evidence of crime.

A further factor associated with the extent of fire damage is often the inadequate water supplies

for firefighting – in over 55% of the occasions when the fire and rescue service encountered difficulties, inadequate water supplies were a problem. In over 22% of cases, access was also problematical but this is not at all surprising as barns are often located away from metalled roadways.

Although the statistics show that 7% of the losses were associated with stock, it is not clear if this related to farm animals. In all cases, the safety of livestock should be at the forefront of the life safety fire risk assessment that is undertaken for the workplace, with plans being made and rehearsed to ensure the safe evacuation of all animals to an area away from firefighting activities.

Fire hazards

Potential sources of ignition in barns include:

- deliberate fire setting
- sparks produced as a result of welding and cutting, and also from grinding discs and other hot work processes
- heating from friction as a result of the use of machinery or of hand tools for processes such as drilling and sanding
- electrical fire hazards from poorly maintained generators, equipment and installations
- parked tractors and farm machinery
- self heating in stored hay, straw, crops and animal feed

Sector Main Category: Permanent Agricultural**Sub Category: Barn**

Permanent Agricultural fires account for 5.2% of all large-loss fires.

Barn fires account for 1.5% of all large-loss fires and 51.3% of all Permanent Agricultural fires.

Causation	Accidental	Deliberate	Unknown
Permanent Agricultural	45.0%	17.5%	37.5%
Barn	34.1%	22.0%	43.9%

Time of fire	Midnight - 6am	6am - Midday	Midday - 6pm	6pm - Midnight
Permanent Agricultural	25.0%	11.8%	32.9%	30.3%
Barn	33.3%	5.1%	30.8%	30.8%

Impedances	Access	Acetylene	Inadequate Water Supply	Resources
Permanent Agricultural	33.3%	16.7%	44.4%	5.6%
Barn	22.2%	11.1%	55.6%	11.1%

6 Permanent Agricultural fires of 80 had impedances, 0 of these had more than one impedance.

2 Barn fires of 41 had impedances, 0 of these had more than one impedance.

Sources of ignition include:

- stored crops and animal feed
- storage of fuel for engines and generators
- stocks of agricultural fertilisers and chemicals
- accumulations of combustible and flammable waste materials

Addressing the problems

Give careful consideration to the likelihood of deliberate fire raising at the time of the fire risk assessment, especially if there are public paths nearby. Suitable security measures should be implemented to reduce the incidence of arson; these may include installing security lighting and introducing a high quality CCTV system to monitor the area. Review the fire risk assessment periodically, whenever there are significant changes to the processes to be carried out in the barn or to the nature of the crops and other combustible materials to be stored there.

Plan and rehearse a strategy for the evacuation of animals where appropriate.

Wherever possible, avoid undertaking hot work in a barn. If hot work is unavoidable, consider alternatives to the use of acetylene. Undertake welding and cutting work on vehicles outside, away from the building.

Competent engineers should be engaged to maintain agricultural plant and equipment in accordance with the manufacturers' instructions. Keep suitable records of maintenance and servicing.

Ensure that electrical installations are designed, installed and periodically tested by a competent electrician in accordance with the current edition of BS 7671 (the IET Wiring Regulations). Inspections should be carried out on a risk assessed basis as recommended in the Periodic Inspection Report.

Where necessary, provide power tools and other items of portable electrical equipment that are suitable for outdoor use, and arrange for them to be inspected and tested at least in accordance with HS(G) 107 and/or the IET

Code of Practice for in-service inspection and testing of electrical equipment. A risk assessment should be used to determine the interval between successive inspections.

Minimise the storage of fuel and flammable solvents in barns. Replace highly flammable and flammable solvents with non-flammable alternatives wherever possible. Where this is not practicable, replace low flash point solvents with those with a higher flashpoint.

Cans and drums of fuel and flammable solvents should be stored in accordance with RISCAuthority Recommendations RC56.

Store all gas cylinders in suitably signed facilities outside the barn that are designed for this purpose, in accordance with RISCAuthority Recommendations RC8.

Store hazardous materials and combustible waste at least 10m from the barn and outdoor plant or equipment.

Where herbicides, pesticides and other farm chemicals are stored, observe the advice set out in RISCAuthority Recommendations RC10.

Regularly cut down undergrowth around the building and avoid the use of proprietary chlorate based weedkillers.

Establish a means of giving warning of fire. The fire risk assessment may indicate that some barns, as a result of their size and use, may require a formal system incorporating automatic detectors and call points designed to an appropriate category, as defined in BS 5839-1. In small buildings whistles, klaxons or air horns may be suitable provided they are clearly audible above background noises in all areas and can be readily identified as being a fire alarm.

Liaise with the fire and rescue service to ensure that water supplies in the area are adequate for firefighting purposes and that access routes to barns are passable by firefighting vehicles.

An effective emergency plan should be in place to ensure the resilience of the business. One way of approaching this is to complete the ROBUST business continuity and incident management planning software, which is available free from <https://robust.riscauthority.co.uk/> ■

Adair Lewis is technical manager at the FPA

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).