Special Feature

The responsibilities of the club manager in the area of fire protection cover not only the safety of members, guests and staff, but also the preservation of club facilities and the survival of the club as a business. RICK FOSTER explains how the manager can reduce the hazards.

The spectre of fire

NSW FIRE NEWS

Fire breaks out at Sydney's Mandarin Club in May, 1980.

In organising for in-house fire protection, the club manager must understand his role in relation to that of his members, guests and staff, and demonstrate an awareness of the scope of the fire problem in terms of life and dollar loss.

He should also understand the relationships between direct and indirect losses, and their effect on the industry, the community and the individual. Quite simply, the keywords are **"awareness", "analysis"** and **"action".** Just as an AAA credit rating reflects the ultimate in business acumen, an AAA rating in fire safety reflects the ultimate in business sense.

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The law

From early time, laws, either implicit or written, have existed covering the well being of people and the safety of structures. Nero was said to have "fiddled" whilst Rome burned; Caesar, during the subsequent rebuilding, decreed that all buildings were to be of stone — thus the first building code was established.

When Cain was asked as to the whereabouts of his brother Abel, Cain said "Am I my brother's keeper?" The answer in modern legal terms is — Yes! you *are* your brother's keeper. Under both statute and civil law, the club manager as a representative of the "company" is responsible.

The laws covering the operation of a licensed club are many and diverse. Each state in some degree is different, but as an example we shall cover New South Wales.

- The construction of the club premises is covered under Ordinance No. 70 — under the Local Government Act, 1919. This act covers in detail the following provisions: classification of buildings; fire safety; structural provision; health and amenity.

When analysing the "occupancy" of a club as defined by the act, we find that the club can come under three classifications: Class III(ii) "residential portions of hotels and motels"; Class VI(i) "eating rooms — cafes — restaurants" and (ii) "non residential portions of hotels and motels"; Class IX(ii) Buildings of a public nature; assembly buildings for: (a) social and recreational purposes; (b) entertainment or amusement.

This act is administered by the local Council.

- The operation of the club may be covered by the "Theatre and Public Halls Act" and the requirements of the Licensing Board. In fire protection/prevention terms the interests of these requirements are administered by the Fire Prevention Department of the Board of Fire Commissioners.

The aims of these regulations are to impose "passive" fire protection provisions such as structural integrity, compartmentation to reduce fire spread, means of egress and the provision of "active" measures such as sprinklers, alarms, hose reels, extinguishers and emergency lighting.

Nature of fire

Fuel requires both oxygen and ignition temperature in order to burn. The extinction of fire may, therefore, be accomplished in three ways:

(a) By reducing the temperature below the ignition point of the burning material (cooling);
(b) By reducing the oxygen content below that necessary for combustion to continue (smothering);
(c) By interrupting the combustion chain reaction.

Life safety

One of the basic principles of fire protection is that buildings should be designed so that all the occupants of the building can escape safely in the event of fire. Unfortunately, it is virtually impossible to guarantee the life of every occupant as no safety device will prevent, for instance, the death of a smoker who falls asleep in an overstuffed chair. Some of the dangers to life and some of the effects of fire on people can be isolated, however, and a knowledge of these may contribute to the design of buildings which will be safe inherently.

When considering the design of escape routes in buildings it is found that the time available for escape determines the safest mode of escape. In addition, the character of the escape route may determine its efficiency.

Smoke: Smoke is not a direct cause of

death but it commonly contributes to fatality together with carbon monoxide (CO) and carbon dioxide (CO_2). As the smoke particles (unburnt carbon) travel away from the fire source they cool and it is possible for gases of combustion to condense on them. Even temporary inhalation of this combination could cause some discomfort.

Heat: The toxic effects of all gaseous products of combustion are enhanced by the associated rise in temperature. Temperature rise alone can be lethal. A study of aircraft fires showed that heat could reach intolerable levels in 90 seconds. As high hazards can be segregated in buildings, a longer time can be allowed for escape before intolerable heat conditions have been reached; a period of 2.5 minutes should be acceptable. But it is desirable to provide for the evacuation of the affected part of a building in the shortest possible time.

Burns: Burns will be inflicted on the human body on the application of excessive heat. A number of factors will influence survival when parts of the body surface are burnt. Firstly, the survival times become shorter as age increases, which is probably due to the natural dehydration of body tissues, i.e. less body water to keep the body cool, secondly, very much longer survival times can be found for females than for males.

Escape

One of the instinctive acts of a person who finds himself in a fire, or any situation over which he does not have mastery, is to run away from the 'hostile environment'. This urge for survival, primitive in origin, is sometimes clouded by the monetary value of personal assets. It may be reasonable to remove a collection of valuable paintings from a room which is known not to be in immediate danger. In a recent factory fire, however, two women who escaped safely later went back into the factory, with a third person, to find their handbags. All three died.

Because escape is instinctive, the route for escape from any point in the building should be, in an ideal situation, as short as possible, easily traversed, big enough to accommodate all escapees, and should not contain gases, smoke or fire. If the route fails to meet these criteria, indecision may be the result and valuable time will be lost.

The escape route is normally considered in three parts:

(i) The path for horizontal movement, from the place or normal occupancy, to the open air or a fire protected staircase.

(ii) The vertical part of the route which is usually the staircase, but in some cases may be the elevator or lift. In this latter case the first part of the escape route may terminate in an elevator hall not associated with a staircase.

(iii) The horizontal route from the foot of the staircase, or elevator shaft, to the open air.

Safety in each part of the escape route depends on the degree of protection given to the other parts of the route. To achieve adequate life safety standards the geometrical design of the escape route(s) should take into account such factors as how many people will be using the route; the way in which they move; their speed of movement; the familiarity with the building; and their tendency to panic.

Problems of route identification and direct-finding occur in unfamiliar surroundings. A study concluded that when routes within buildings are completely unimpeded, and contain a normal environment, the provision of adequate direction signs is extremely important. The frequency of "lost" people on a complex but often used route was reduced from 40 to 17 per cent by the improvement of one sign along the route.

In the same study it was found that the more often a selection point occurred in a single route, the more often was a wrong selection made for the expedient route. Direction-finding in a large complex building in a fire appears to be a very hazardous procedure. For this reason, emergency lighting units should be installed along the escape routes.

Hazard control

This is defined as the recognition of fire hazards in a building and the subsequent removal or modification of the process or system to which they pertain. A condition is described as hazardous to the extent where there are factors pre-

Councils blitz NSW clubs on fire safety

Councils throughout NSW have recently been concentrating their inspections on club buildings built before 1974, to assess whether they are up to the required level of fire safety.

This is because a new building code, Ordinance 70, was introduced in 1974 to replace the previous Ordinance 71. Ordinance 70 requires a higher standard of personal safety for occupants of a building should a fire break out.

Councils were advised by a directive from the Minister of Local Government in January 1980 that the Government required an upgrading of the level of fire safety in the community. They were given the power to upgrade premises through section 317D of the Local Government Act, using Ordinance 70 as a guideline.

The procedure is for councils to issue clubs with a notice, known as a 317D notice, which sets out the improvements needed for a club building to meet with the general conditions of Ordinance 70. These conditions could range from minor "housekeeping" requirements,

sent which increase the likelihood that a potential fuel source will connect with a potential ignition heat source.

Just as important is recognising areas that have a high "fire load"; this is defined as the weight of combustible material per square metre present in any given area, and represents the amount of fuel available to a potential fire.

Steps can be taken to reduce the hazard, for example, moving a combustible material away from a potential heat source. A common example would be to remove tea towels hanging near an oven in the kitchen.

Reduction of fuel load, however, is a more difficult area to deal with. The very nature of the club industry — and in particular if large scale catering is present — requires the storage of linen, paper, cooking oil and the like. Modification of storage areas can drastically reduce these hazards.

Fire protection equipment

The provision of fire fighting and protection equipment is covered by the requirements of the various bodies, outlined previously. These requirements, however, are the **minimum.**

Equipment can broadly be categorised as follows:

Automatic systems, such as:

(i) *Smoke or heat actuated fire detection and alarm systems.* An automatic fire detection system comprises heat or smoke detectors (or both) situated throughout the building. Should a fire occur, the detector senses the presence of heat or smoke and alarm bells audible throughout the premises are actuated. At the same time it is usual for the local fire brigade to be automatically summoned via private phone line and signalling equipment.

(ii) *Sprinkler systems,* comprising a network of pipes throughout the building to which sprinklers are attached at prescribed spacing. The "control" valves of the piping system are connected to a water supply, usually the towns main.

In the event of fire, the fusible element in the sprinkler head nearest the fire is actuated, releasing a water spray. Only those sprinkler heads directly affected by heat will operate (it is a common fallacy that

such as clearing the areas around exits, to structural or major alterations such as providing extra exit doors or early warning detection systems.

If major changes are needed, the club has 90 days to submit plans and specifications to the council. During this time the council will be happy to discuss the plans, negotiate with the club and possibly come up with a compromise that is satisfactory to both parties.

Once plans have been submitted and approved by the council, the club is given between 60 and 90 days to complete the work. If a club is not happy with the council's directions, it can object to the Land and Environment Court within one month of receiving the notice.

If a club refuses to do the work, or takes an unnecessarily long time to complete it, the council can then refer the matter to the Liquor Administration Board, which can order the club to start or step up the improvements. The Board does not necessarily have to agree with what the council requires of the club.

Fortunately, the Board has never yet had to intervene as all clubs seem to have realised the importance of fire safety in protecting the lives of patrons. But if it did get to that stage, clubs can be reassured that the Board takes fair and reasonable attitude, and prefers councils and clubs to negotiate as much as possible to resolve the matter before having to step in.

If a club continues to refuse to undertake the necessary alterations, it can be liable for fines ranging from $2000 to $10,000.

A 317D inspector for a large Sydney council, who had recently completed an inspection of all clubs in his area, told *Club Management* that every club he inspected in his area had been required to attend to some aspect of its fire protection equipment.

"We asked them to look at such things as early warning detection systems, emergency lighting, provision of fire hose reels and fire extinguishers, and in some cases to increase the number of exits. Minor things included treating the stage curtains with fire retardent and placing proper signs and directions on fire extinguishers."

All the clubs had understood the reasons for the items being on the 317D notice, but the main problem was finance, the inspector said. Although some clubs had taken some time to get their improvements underway, all had now started them.

"In all cases, the main priority in assessing a club for fire safety is to have all people evacuated as quickly as possible in the event of fire. The next priority is to protect the building, and the third is to prevent the spread of fire to adjoining buildings," he said.

There are areas of fire safety which clubs frequently neglect but can easily rectify, according to the inspector. For example, a club may store tables and chairs in passageways used for emergency exits, lock exit doors, or keep flammable materials in an area which, if set alight, could spread quickly to other areas of the club.

"It's mainly a matter of good housekeeping within the club, such as making sure the equipment for fire fighting and emergency lighting is maintained properly.

"It's also a matter of knowing the proper procedures. For instance, clubs should have a licensed electrician check all emergency lighting and exit signs every six months to ensure that they function satisfactorily. Clubs should also have an evacuation drill with the staff — I haven't noticed many doing this."

A spokesman for the Insurance Council of Australia said that clubs which do not comply with the Ordinance 70 fire regulations may have their insurance claim rejected.

"There is a general provision in every policy that the policy holder will comply with the law. Non-compliance with the provisions of Ordinance 70 could jeopardise their insurance," the spokesman said.

Marketing manager for club designer/builders Leighton Contractors Pty Ltd, Mr Leo Sommerich, said Australia's fire safety requirements were the most advanced of any country he had ever visited.

He urged all club boards not to try to take any short cuts when it comes to fire safety. As he frequently says to those clubs which question the cost of providing the required fire safety equipment: "Would *you* like to have on *your* conscience a loss of life through not complying with the regulations?

He suggested that as soon as a club receives notice of a council's requirements it should seek advice from an acknowledged expert and obtain an assessment of the improvements needed.

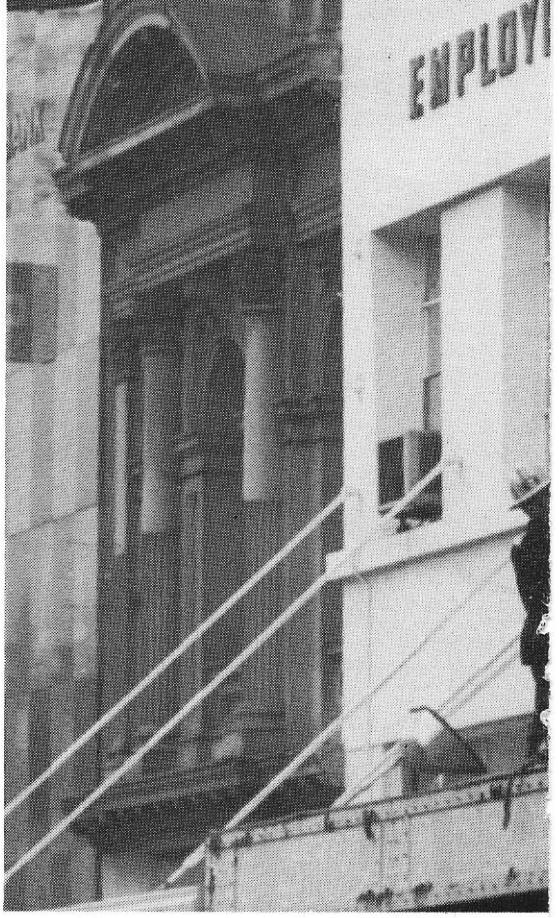
they all come into effect). The flow of water through the "control" valve actuates audible alarms and, as before, summon the local fire brigade.

(iii) *Special Systems:* These are specialised automatic extinguishing systems provided to protect local "high fire risk" areas. An example could be in the kitchen covering the deep fat fryer, hot plate, griddle and associated hood, filters, plenum and ductwork. Twenty five per cent of fires in buildings are known to occur in food areas.

The presence of all three fire elements (oxygen in the air, heat — either gas or electricity, and fuel in the form of oil and grease) all in very close proximity requires special consideration. Typically, special systems would consist of a container of special dry chemical powder or aqueous liquid agent, distribution pipework, nozzles covering all critical areas, a detection system and automatic power shut down equipment. This is termed "spot protection" in critical areas.

Manual systems, such as hydrants, hose reels, portable extinguishers and fire blankets.

Hydrants are installed throughout the premises and connected to a suitable water supply such as the town main. They are principally for the use of the fire brigade, since the size of the hoses and water flows involved require special training to handle.



Hose Reels: These devices, usually about 20 metres of 19mm or 25mm rubber hose wound in a "live" reel, are for general use by personnel without extensive training.

Portable extinguishers and fire blankets are "first aid" appliances used to control and extinguish fire in the early stages.

Fire fighting

Prompt and effective action is the best course. Fire fighting can be categorised into three areas: (i) Action of a fixed system such as sprinklers; (ii) Action by the public fire brigade; (iii) Action by others.

The first two are outside the scope and expertise of the general public. The third and most important course is the use of the "first aid" appliances.

Extinguishing media
Water
Foam (Note 1)
Carbon dioxide (CO_2)
BCF
Dry chemical powder (regular)
Dry chemical powder (ABE type) (Note 2)
Special metal dry powder

E — Effective
L — Limited effectiveness
N — Not effective
D — Can be dangerous
* — Shutting off supply the best answer

First aid appliances such as portable extinguishers contain varying extinguishing media and are suitable for various types of fire as shown in the table below.

Types of fire, as classified by the Australian Standards Association, are:

A: Fires involving carbonacious substances such as wood, paper, upholstery, PVC etc (could be anywhere in the club).

B: Fires involving flammable liquids such as petrol, oil, cooking fat (kitchens, out-of-the-way storage areas).

C: Fires involving flammable gases.

D: Fires involving metals such as magnesium shavings (unlikely in a club).

E: Fires involving live electrical equipment.

Fire, when it occurs, is unlikely to be kind enough to confine itself to one type of combustible, for example an electrical fire can quickly involve other substances such as wood, paper etc. However, an electrical fire, once the power has been shut off, changes into another class — e.g. class A burning PVC insulation.

"The right extinguisher in the right place — clearly visible and accessible" is a good motto to follow. And, rather than have a multiple of types, selection of a "multi purpose" unit (such as an "ABE" Dry Powder unit in a kitchen) which is able to handle many types of fire is the best.

Rather than have the extinguisher right next to the hazard, thus involving the potential user in a hazardous situation trying to get at it, install it at the exit. The potential user will then see it as he is leaving and be inclined to use it.

Knowledge of how a fire extinguisher works is just as important. Many people are frightened to use one not knowing what will happen when it operates. The Fire Prevention Department of your local fire brigade or the company supplying and servicing the equipment can arrange to demonstrate the various types in a suitable place.

Fire protection equipment, whether it be a sophisticated fire detection/sprinkler system, or the humble portable extinguisher, stands unused, we hope, constantly. When it is needed to be brought into action it *must* work, first time and effectively. Only a regular inspection and maintenance programme can ensure this. ■

CLASS OF FIRE				
A	**B**	**C**	**D**	**E**
E	N D	N	N D	N D
L E	E	L	N D	N D
L	L	L	N	E
L	L	L	N	E
N	E	E	N	E
E	L E	E	N	E
L	E	L *	E	L

Note 1: Chemical foams — L for Class A
Aqueous type — E for Class A
Note 2: L for Deep Fat Fryers