

ST BERNARD'S HIGH SCHOOL



FIRE PREVENTION & FIRE PROCEDURE INSTRUCTIONS

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MISSION STATEMENT

St Bernard's is a school community that aims to live by Jesus' commandment, "Love one another as I have loved you."

We are a Catholic learning community committed to the ongoing development of the entire potential of every person, achieved through a broad, balanced and relevant curriculum.

We care for each other as individuals of equal worth, regardless of status, sex, race or religion and thus actively seek to promote safeguarding, justice and fairness.

We provide an atmosphere in which all can grow in our Faith, and encourage this faith by a lively relevant liturgy.

We work with parents, parishes, local communities and industry to prepare our students for the opportunities of adulthood.

1. FIRE PREVENTION

1.1 Introduction

The prevention of fire is of vital importance. Most fires are caused by carelessness and ignorance; a high standard of fire awareness will prevent this. It is the responsibility of all staff to become conversant with these instructions.

Upon the outbreak of fire, the saving and preservation of life takes precedence over the salvaging of property. A member of staff's first and over-riding duty is to look after the students or other persons under their charge and this will mean the evacuation of the building. No attempt should be made to fight the fire until their safety is assured, and then without exposing any person to risk.

The school fire officer is the Senior Caretaker or Duty Caretaker (in their absence) and he/she should be informed of all fires, no matter how small. A fire is not considered extinguished until such time as it has been inspected by the fire officer.

1.2 Fire Risk Assessments

The Regulatory Reform (Fire Safety) Order 2005 is now the only piece of primary fire safety legislation in England. Under this legislation, fire safety must be achieved by preventative and protective means both before and during a fire occurring. The three key elements of legislation are:

- Protective and preventative fire safety measures;
- Fire risk assessment;
- Emergency planning.

Fire risk assessment is mandatory in workplaces and non-domestic premises. It will allow the fire hazards and the risk associated with those hazards to be removed, reduced or managed. It will also ensure that adequate fire precautions are provided. The important aspect of the assessment is that it should be practical and systematic, to ensure the whole school is examined, including every room or area, particularly those not often in use.

Emergency planning is also required by law. An emergency fire plan represents a premises fire policy, including details relating to safety procedures, methodology, objectives and information on how these are to be managed. The plan also includes detailed specification of safety systems, installations and equipment and how staff will interact with these facilities.

1.3 Strategy for Fire Prevention

The management strategy for fire prevention can be specified as follows:

- Everyday management and vigilance by staff to ensure that potential hazards are kept under control to prevent the occurrence of fire; and

- Alarm, evacuation and emergency action backed up by notices, drills and practice to ensure that correct action is taken in the event of a fire.

A strategy also includes:

- Planning for the actions to be taken in the event of a fire:
 - Training of staff, including any specially delegated function
 - Provision of instruction to students
 - Display of appropriate fire instruction notices
- Control of risks associated with activities or processes which may cause or adversely affect any outbreak of fire e.g. storage, gas, electricity, vandalism, etc;
- Check on existing structural precautions and seeking advice where these are thought to be deficient;
- Monitoring the effectiveness of precautions e.g. analysis of evacuation drills, annual review etc.

1.4 Issue of Fire Instructions

The issue of fire instructions to staff should take place during induction. This document should be issued and explained to an employee in the same way as details of pay, work hours and holidays.

1.5 Staff Training

The fire officer, working with the member of SLT responsible for training, is responsible for ensuring that all staff are trained in accordance with the requirements of the school. Every member of staff will receive instruction in fire precautions through this document being issued during induction. This training will be recorded in the training section of the fire log book.

After the initial instruction during induction, further training will be provided as necessary through the school training programme.

1.6 Control of Risks – Training of Staff and Instruction to Students

Staff

The training of all staff forms an essential part of the schools fire precautions. The aim is to ensure that all staff receive training in the basic appreciation of the risk of fire and the actions to be taken if a fire occurs. This should include instruction appropriate to their specific responsibilities in an emergency.

Instruction and training should include the following:

- Action to be taken upon discovering a fire;
- Action to be taken on hearing the fire alarm;
- Method of raising the alarm, including the location of call points, use of internal telephones and location of external telephones;
- The correct method of calling the fire brigade;
- Location and use of fire fighting equipment;
- Knowledge of escape routes;
- Evacuation methods for the building, location of assembly point and the method of accounting for people;
- Stopping machinery, activities and isolating power and fuel supplies, where appropriate;
- Appreciation of the importance of fire doors and the need to close all doors and windows at the time of the fire, or on hearing the alarm.

Students

Students should be instructed when they first attend the school to enable them to:

- Identify the fire alarm;
- Know the action they should take on hearing the alarm;
- Know the location of the assembly point;
- Know what to do if they are not in a supervised group, in the event of a fire.

These points should be included on the fire notice and reinforced during practice evacuations.

1.7 Fire Drills

Fire drills are to be carried out once in every term and can be combined with instruction given to staff. These drills will include a simulated evacuation where one escape route is not available. Each drill will be started by activating the fire alarm and the whole premises will be checked as if an emergency had occurred. When a fire drill has been held, it will be recorded in the fire log book.

1.8 Fire Alarm System Testing

The fire alarm system installed at the school operates a 'self checking' system, which removes the requirement for actual physical testing. However, the fire alarm system will be physically tested each week. A different call point should be used each time and recorded in the fire log book.

1.9 Emergency Lighting

The emergency lighting is to be examined regularly by the Senior Caretaker, or a member of his staff. The fire log book should be updated indicating any defects and these will be brought to the attention of the fire officer immediately. The lighting should also be checked by an electrical contractor annually.

1.10 Emergency Exits

All emergency exits are to be kept clear from obstruction at all times.

It is the responsibility of Heads of Department/Admin. areas to ensure staff are fully aware of the contents of these instructions and know of all fire exits and the assembly point.

1.11 Fire Alarms

The school has an automated fire alarm system with fire sensors distributed across all the school buildings. The fire alarm will be activated should any of these sensors detect smoke and/or heat. The school also has a number of single stage electrical fire alarms which are operated by breaking a glass release panel.

In the event that the fire alarm system fails, any person finding a fire is to raise the alarm by shouting "Fire, fire, fire". An alarm is to be raised regardless of how small the fire may be.

The fire alarm system is to be checked annually by appropriate external contractors and any associated log book updated accordingly.

1.12 Fire Fighting Equipment

Fire Extinguishers

There should be the correct type of fire extinguisher at each 'Fire Point' dependent upon the location. Fire extinguishers are colour coded to identify on what type of fire they should be used:

Colour	Type	Usage
Red	Water	Should only be used on solid (Class A) materials e.g. wood, paper, textiles, plastics etc.
Cream	Foam	Suitable for use on (Class B) liquids e.g. petrol, oil, diesel and class A fires
Blue	Dry Powder	Suitable for use on (Class C) gases and L.P.G. Also class A and B fires and electrical hazards
Black	Carbon Dioxide	Suitable for use on electrical hazards and class B and C fires
Yellow	Wet Chemical	Should only be used on cooking oils

Fire Blankets

Fire blankets are classified as 'light duty'. They are suitable for dealing with small fires in containers of cooking oils and fires in clothing.

Fire Instruction Notices

Printed notices should be clearly displayed at all fire points stating concisely what staff and others should do if a fire is discovered, or if they hear the alarm. These notices should be permanently fixed in position and suitably protected to prevent loss or defacement.

1.13 Fire Prevention Checks

Heads of Department/Admin. areas are to ensure that regular fire prevention checks are carried out, including:

- Unnecessary lights/electrical appliances (TV's, videos, microwave ovens, etc.) are to be switched off and where possible unplugged;
- Electrical appliances, including convector heaters and associated wiring, are to be inspected regularly and PAT tested appropriately;
- Staff rooms, cupboards and waste bins etc.

The following precautions are to be observed at the end of the working day:

- With the exception of essential systems and computer suites, which must continue to operate after normal school hours, all electrical appliances and lighting systems are to be switched off and, wherever possible, disconnected;
- Waste paper bins are to be emptied and the contents removed from the building;
- The last person leaving the area should ensure all relevant equipment is turned off and safely closed down;
- All parts of the school are to be checked by the duty caretaker after staff have left for the day;
- Windows and inspection spaces are to be left free from obstruction. To allow detection of a fire from outside, prior to vacating rooms or premises, at the end of the day all curtains should be drawn apart other than when security requirements dictate.

1.14 Housekeeping

Tidiness and cleanliness are essential fire prevention measures. The accumulation of rubbish and waste material is to be kept to a minimum; it should be cleared away at the end of each school day and removed to a safe location outside.

Paint materials, used stencils, oily rags and overalls etc. are subject to spontaneous ignition and such items should be removed to a safe external location at the end of the school day. If this is not practical, they should be deposited in close-lidded, non-combustible containers, placed well away from stores and other combustible material.

The storage or accumulation of combustible materials in roof voids, under stairs and similar places is not permitted.

1.15 Smoking

Smoking is one of the main causes of fire and for this reason it is prohibited anywhere on the school premises.

1.16 Refuse and Rubbish

Refuse or rubbish must not be permitted to accumulate in or around the school; it is to be removed to a central collection point and disposed of at regular intervals. The burning of refuse as a means of disposal is not permitted on the school premises.

1.17 Flammable Materials

Flammable materials are to be stored in a locked cabinet, which should not be placed near any form of heating.

1.18 Electrical Fires

Electrical fires are not to be used within the school unless they have been approved by the fire officer.

1.19 Electrical Appliances

When using electrical appliances, the following rules should be adhered to:

- They are to be switched off and unplugged, whenever possible, when not in use;
- They are to be fitted with the correct plug for the socket provided and the plugs should be undamaged;
- Temporary wiring shall not be used;
- Where extension leads are used, these should be appropriate for the use intended. In the event of doubt, the Premises Manager should be consulted;
- Inspection lights are to be of an authorised pattern and fitted with a guard;
- Electrical faults are to be reported immediately to the Senior Caretaker and Premises Team;
- Blown fuses must only be replaced, after establishing the cause for the blowing, with fuses of the correct rating;
- Flexible cable to fittings should be as short as possible and should be inspected regularly and equipment replaced if worn.

1.20 Controlled Burning

Burning of any sort is not allowed in the school grounds.

1.21 Rubber

Rubber is not to be stored with other flammable stores and is to be kept cool, dry and ventilated; it is to be stored away from the rays of the sun.

1.22 Paint Solvents

Paints and solvents suitably marked are to be held in a segregated store, which is clearly signed. Paint stores are to have electrical fittings of the approved safety pattern and the floor should be covered with sand.

1.23 Grass and Undergrowth

Grass and undergrowth is to be kept cut well back from buildings.

1.24 Buildings used for Entertainment

Buildings should have adequate means of escape in case of fire and these are to be clearly signed, unlocked and unobstructed. An adequate number of stewards or ushers should be available. A sufficient number of fire appliances are to be available to deal with an outbreak of fire.

Decorations are not to be put up without the advice of the fire officer; any decorations which increase the fire risk are not permitted. Decorations are not to be pinned or attached to any form of electrical wiring.

Naked flame is not to be used as a means of illumination; however, if candles etc. are necessary they are to be fixed in candlesticks and must not be positioned so as to present a fire hazard.

Any temporary staging is to be secure and not obstruct fire exits. Supplementary wiring is only to be carried out by a qualified electrician and following consultation with the fire officer.

The fire officer is to be notified of any special events involving additional decorations or any fire risk. For such events a risk assessment is to be carried out and submitted to the fire officer.

1.25 Kitchens

In order that losses by fire are kept to a minimum and that catering facilities are not jeopardised, a high standard of fire precaution in the kitchens and food technology classroom is of vital importance. Catering and food technology staff should be fire conscious and be trained in the action to be taken should a fire occur.

1.26 Disabled Persons

To facilitate the use of school premises by staff, students and visitors who are disabled, appropriate arrangements need to be made. In particular, the person being visited or who is responsible for the area being used by the disabled person, must ensure that safe egress in case of fire or an emergency evacuation has been given due consideration.

1.27 Vandalism and Damage Limitation

Fire caused by vandals or persons breaking into a building intent on causing damage is a constant risk and this type of fire is probably the greatest risk facing the school. Such fires are often started at night or during the holidays and can result in extensive material damage, and disruption of students' education.

The opportunity for reducing such vandalism lies partly in the development of good relationships with neighbours and partly in the security of the premises by ensuring windows and doors are properly secured when the buildings are unoccupied. Combustible materials should not be left where they are immediately accessible to intruders and flammable liquids should be stored securely.

Structural fire precautions incorporated to assist escape from buildings will also reduce the spread of fire; all fire and smoke doors should be closed when the buildings are vacated (closing of all doors and windows is recommended to limit the spread of smoke damage).

1.28 Curtains, Furnishings, Art Displays and Decorations

Care should be taken when choosing curtains, furnishings and fittings, and fire retardant materials should be used whenever possible.

Art displays and other decorations of a combustible nature can increase the spread of fire considerably and therefore the quantity and location of such displays is essential in reducing fire risks:

- Displays should not be located on escape routes or block fire exits;
- Sources of ignition, such as light bulbs should not be placed near the displays;
- Expanded polystyrene and other plastics produce large amounts of toxic black smoke and considerable heat; they should not be allowed on escape routes;
- In corridors or on staircases, wall displays made from combustible material should be limited to 20% of the available surface.

1.29 Storage

Combustible materials such as paper should be stored in designated areas where they will be secure against unauthorised access. These areas should be free of sources of ignition such as heaters.

Flammable liquids must be kept in purpose built storerooms or cupboards provided with ventilation and all persons handling such material should be aware of the dangers.

1.30 Electricity

All electrical apparatus should be installed by an approved contractor, using the correctly rated fuse. If a fault occurs, have it repaired before using the apparatus again. Electrical installations should be checked regularly, as electric faults are a major cause of accidental fires.

Wherever possible, all electrical equipment not required to be used out of hours should be switched off and the plug removed from the socket. All portable equipment is to be checked appropriately.

1.31 Fire Doors

Fire doors have two prime functions, namely to protect:

- a) Escape routes from the effects of fire, so that occupants can safely reach a fire exit; and
- b) The contents and/or the structure of a building by limiting the spread of fire.

Neither of the above functions will be satisfactorily undertaken unless the door is a good fit, the self-closing device is working efficiently and the door is not wedged or held open. Even if a door is not a fire door, it may reduce smoke and heat damage, so at evenings and weekends it is good practice to have all doors closed.

1.32 Contractors

Building contractors bring a large number of ignition sources in to the school; tar boilers, blow lamps, welding equipment and LPG bottles can all result in a higher fire risk. All contractors entering the premises should have completed a risk assessment of the works to be undertaken and be aware of the fire precaution measures and procedures should a fire occur.

At the end of the school day, no building materials should be left outside where vandals could use them to damage the premises.

1.33 School Grounds

Access for emergency vehicles must be clear at all times.

Combustibles, rubbish containers and equipment which could be used by vandals, especially those used by external contractors, must not be left unsecured.

1.34 Fire Routine

The purpose of the fire routine is to establish what action is to be taken in the event of a fire. It should be a written notice and cover the following basic facts:

- What to do if you discover a fire;
- What to do when you hear the fire alarm;
- Evacuation;
- Assembly;
- Roll call;
- Calling the fire brigade;
- Special needs of cleaners, disabled etc.

1.35 Advice on the Procedure in the Event of Fire

At the time of the emergency, if you:

- Discover a fire or one is reported to you - operate the nearest fire alarm call point by breaking the glass;
- Hear the fire alarm - evacuate the premises immediately, as detailed in the evacuation procedure for the school.

Ensure that the fire brigade is called by dialling '9/999'.

After the emergency:

- Do not re-enter the premises until advised that it is safe to do so;
- If the fire has been extinguished by school staff, except for ensuring that the fire is out, do not disturb any evidence which could indicate the cause of the fire;

- Ensure that the premises are in safe working order before re-occupying i.e. fire doors are satisfactory, fire alarm is operational, extinguishers are re-charged;
- Statistics show that publicity given to a school fire can result in a second fire. Members of staff are not to talk to the media, unless authorised by the Head Teacher;
- The fire officer is to analyse the procedures followed during the fire to determine if any changes are required.

1.36 Fire Records

The following records are to be maintained by the Senior Caretaker:

- Persons with special responsibility;
- Fire alarm sensor and call point locations and checks;
- Fire alarm tests;
- Fire alarm fault records;
- Fire alarm maintenance inspection;
- Emergency lighting maintenance;
- Fire fighting equipment maintenance and tests;
- Fire drills;
- Fire training records;
- Fire brigade visits.

1.37 Specific Fire Prevention Risk Areas

Details on the specific fire prevention risk areas below are attached as Appendix A.

- Displays, display boarding and decorations;
- Electricity;
- Deep fat fryers and Bratt pans;
- Cylinders of industrial and medical gases;
- Special precautions: Workshops;
- Special precautions: Science.

1.38 Publication of Fire Instructions

These instructions are to be held by all Heads of Department/Admin. area. All new staff are to have the fire instructions brought to their attention.

Dependent upon location, a classroom fire notice attached as Appendix B is to be displayed in each classroom.

2. FIRE PROCEDURES

2.1 General Fire Notice

If you should discover a fire:

- Operate the nearest fire alarm point without delay;
- Call the fire brigade by dialling 9/999 and give the precise location of the fire;
- Evacuate all occupants to the agreed assembly point;
- Staff – attempt to extinguish the fire with nearest suitable fire appliance (only when safe to do so).
Do not attempt this if the fire has reached such proportions as to endanger life or escape, but proceed to the assembly point.

On hearing the fire alarm:

- Vacate the room you are in;
- Proceed to the assembly point and await the roll call.

On arrival of the fire brigade, the fire officer or senior member of staff should meet the fire brigade's officers and provide as much information as possible about the fire.

Make sure you know:

- Your means of escape, both primary and secondary;
- The nearest fire alarm point;
- The nearest fire appliance and how it should be used;
- The assembly point.

In the event of a fire:

- Maintain silence;
- Do not stop to collect your personal belongings;
- Do not rush;
- Do not attempt to pass others.

2.2 Fire and Emergency Procedures

Fire Officer

All liaison in respect of fire precautions in St Bernard's High School will be through the fire officer.

Fire and Emergency Procedures

Fire drills must be carried each term to enable all staff and students to become familiar with the procedure for evacuation. Points from different zones should be used to trigger the alarm for each fire drill, to ensure that all such points are in working order.

On the fire alarm sounding all staff, students and visitors must leave the school buildings immediately, closing doors and windows behind them, if possible.

All staff, students and visitors should proceed to their allotted area within the designated assembly point, where a roll call shall be completed.

Following investigation of the cause of the fire alarm sounding, on the instructions of the fire officer, the fire brigade should be summoned. If there is no risk of personal injury, attempts may be made to tackle the fire using a suitable type of extinguisher and to switch off power sources from the mains.

The location of gas cylinders must be known and the Senior Fire Brigade Officer informed on his arrival.

At all times fire exit routes must be unobstructed and all exit doors must be unlocked whilst there are people in the building. Smoke doors must not be hooked or wedged open, other than to allow temporary

movement within the area. Exit routes must be clearly identified and marked. The use of display material must be controlled in fire exit routes.

Persons appointed as fire wardens should liaise with Heads of Department/Admin. areas and other staff to establish safe procedures.

Extinguishers

The location of all fire extinguishers must be clearly marked and no materials must be placed near these, in such a way that their location is hidden or that their use is hindered.

Training in the use of fire extinguishers should be arranged for fire marshals and other appropriate staff.

Storage of Flammable Materials

Flammable materials such as paper, floor cleaning materials, and petroleum products must not be in boiler houses, adjacent to kilns or other high risk locations.

2.3 Classroom Fire Notice

The appropriate classroom fire notice, attached as Appendix B, shall be displayed in each classroom, adjacent to the exit point.

2.4 Instructions for the Fire Officer

The fire officer should undergo training in fire duties at the appropriate training establishment before assuming their appointment. Where it is not possible to arrange training before the appointment is assumed, they should attend the first practicable course.

Fire officer's primary duties are as follows:

- a) Responsible to the Head Teacher for all matters relating to fire precautions and the school fire organisation; they should establish close liaison with the local fire service in the area;
- b) To supervise, maintain and control, on behalf of the Head Teacher:
 - o Preparation of school fire instructions;
 - o Measures for fire prevention and fire fighting, including fire practices;
 - o Allocation, maintenance and testing of all fire-fighting equipment held by the school for its fire protection;
 - o The efficiency, training and duties of the fire wardens and the instruction of all in the use of fire-fighting equipment;
 - o Arrangements for summoning fire-fighting resources; details to be displayed in buildings and by the school telephone exchange;
 - o Liaison with the appropriate fire service representatives in the area;
 - o Suitable records to show the training of staff and attendance on courses.
- c) The distribution and appropriate inspection maintenance and testing of school fire equipment, fire alarms and water supplies;
- d) To ensure that any building or part of a building used either temporarily or permanently for plays, concerts, films, dances and similar entertainment has had a risk assessment carried out and appropriate action taken on this, as required;
- e) To take charge of fire fighting operations until the fire brigade arrives;
- f) To ensure that adequate arrangements are made for signposting and marking water supplies for fire fighting and that a water supply map is maintained;
- g) To ensure that authorised fire notices are displayed as necessary;
- h) To ensure that civilian contractors employed within the school perimeter maintain an adequate standard of fire precautions.

2.5 Instructions for Fire Marshal

All staff act as fire marshals and as such are responsible for facilitating the safe leaving of the building by all occupants.

2.6 Instructions for Assembly Area Controllers

The Deputy Head Teacher is to take charge of the organisation of assembly and roll calls. In the absence of the Deputy Head Teacher, a member of the Senior Leadership Team is to take charge.

The person in charge of the assembly area should ensure, as soon as possible:

- a) Roll calls are taken quickly and efficiently;
- b) Responsible teachers and administrative staff report their roll call status to them as soon as it is completed;
- c) Any staff or students unaccounted for are to be notified to administration staff.

APPENDIX A

A - Displays, Display Boarding and Decorations

Care should be taken that educational and display materials do not unintentionally cause a fire hazard. The same caution is needed in respect of decorations using combustible materials i.e. Christmas decorations.

Flimsy materials, both natural and artificial, can be highly combustible and increase the risk of fire occurring. Dependent upon the quantity and location they will increase the rapid spread of smoke and fire. Blazing pieces may drop over a wide area before persons have a chance to escape.

In determining what is reasonable by way of display materials and/or decorations the over-riding consideration is whether persons are likely to be trapped as a result of fire involving such materials. This is not easy to assess as it depends upon escape routes and how these materials may contribute to the spread of fire in these areas. The following guidance can be given:

- In 'protected' stairways, corridors and lobbies the wall surfaces should be non-combustible and means that display boards and free standing displays should not be placed in these areas;
- In 'horizontal circulation areas' these may comprise 80% non-combustible materials. This means that display boards may be acceptable, subject to the area covered being within the 20% limit and that they are Class 1 fire resistant;
- Where displays are provided in other areas, they must be located well clear of any source of ignition e.g. cookers, Bunsen burners, etc;
- Where there are any areas of doubt, for example whether a certain material is acceptable (labelled fire resistant), then the advice of the fire officer should be sought.

Where paper, natural or plastic materials are used for decorations or display, they should not be suspended from light fittings or near any heat source; coloured paper must not be placed inside light diffusers for coloured effects.

Cellular plastics (polyurethane foam) presents particularly severe fire risks and should not be used for display purposes.

B - Electricity

The current running through electric wiring is a source of heat and if a fault develops in the wiring that heat can become excessive and start a fire. Neglect and misuse of wiring and electrical appliances is one of the main causes of fire. Fuses or circuit breakers are incorporated in a system to protect against overloading in the event of a defect.

Plugs and circuits must be correctly wired and fused; equipment and plugs with loose connections must be taken out of use. In the event of a fuse protecting equipment or a circuit blowing, the cause should be identified before replacing the fuse. Any replacement of fuses must be with ones of the same rating.

Electrical socket outlets must not be overloaded and the use of multiway adaptors inserted directly into the socket outlet is not permitted. It is therefore essential that before additional equipment is obtained, facilities should exist to allow its safe use.

It is permissible to run up to four items of equipment which draw low amounts of current e.g. computer and monitor, from a single socket outlet by a fixed plug connected to a purpose designed four socket outlet with an integral fuse. Careful location of the cable is essential and the unit should be removed when no longer used.

Flexible cables are to be replaced when worn or damaged. Whenever possible, after use outlets should be switched off and plugs removed from the socket.

Any addition or alteration to the permanent electrical system of buildings must be carried out by a qualified electrician. Under no circumstances should work of this nature be undertaken without the prior approval of the Senior Caretaker.

C - Deep Fat Fryers and Bratt Pans

The principal fire hazard in kitchens is the deep fat fryer and/or Bratt pan, whether or not it is thermostatically controlled. Cooking oils and fats over-heating and boiling over usually result in a fire which can rapidly involve the ceiling or fume extraction ducting. Fires in fryers and Bratt pans usually occur when they are left unattended, or when used by unqualified staff. Catering staff are to adhere to the following precautions:

- Deep fat fryers and Bratt pans are not to be left unattended when switched on and the appropriate fire precaution notice should be displayed;
- After use and when the oil has sufficiently cooled, deep fat fryers and Bratt pans should be drained the oil strained into a suitable container;
- After repeated use of oil, a residue of food particles can build up and the danger of fire can become progressively higher;
- Defects in cooking apparatus are to be reported to the Premises Manager immediately;
- In the event of fire, electricity/gas supplies are to be switched off, preferably at the main switch or valve located by the exit and appropriate action taken.

D - Cylinders of Industrial and Medical Gases

Cylinders containing industrial and/or medical gases are to be treated as dangerous stores. The most serious fire dangers presented by these gases are those of explosion and the rupturing and fragmentation of cylinders. In addition, there is a danger to fire fighters of poisoning or asphyxiation from escaping gas.

Cylinders containing gases, whether flammable or non flammable, are liable to rupture as a result of increased internal pressure and loss of tensile strength of the metal if the container and contents are heated. Oil and grease will ignite violently in the presence of oxygen and if the latter is under pressure an explosion may result. Cylinders and fittings should be kept away from all sources of contamination such as oil etc.

Ignition of flammable gases can produce an explosive effect by the rapid expansion of heated gaseous products. Once a flammable concentration of gas and air has been reached a relatively small spark will be sufficient to cause ignition.

Where possible, compressed gas cylinders are to be stored in a separate detached location situated at least six metres from other buildings. Such a structure should be sufficient to protect cylinders from the direct rays of the sun and should be provided with adequate ventilation. Where possible empty cylinders are to be kept separate from full ones and notices are to be displayed denoting the locations of empty or full cylinders.

Flammable gases are to be stored separately from oxygen, compressed air, nitrous oxide etc. They can be stored in the same building, separated by a non-combustible partition having a fire resistance of one hour. Acetylene cylinders are to be stored and secured in the upright position.

Smoking and the use of naked flames is to be prohibited within six metres of compressed gas stores and suitable warning notices are to be displayed.

E - Special Precautions: Workshops

Cutting and Welding

Cutting and welding operations have caused many serious industrial incidents. Fire can be started in several ways, for example by the direct contact of a torch with combustible material, falling hot metal, etc. Indirect heating of a material through a metal plate being cut or welded may also result in a delayed fire. Before any hot work is begun, all combustible materials should be removed from the vicinity, or otherwise protected. There should be strict control of all hot work.

The use of cutting or grinding equipment should be carefully controlled as the sparks produced in such operations are hot enough to be ignition sources. Additional fire extinguishers immediately to hand, should be provided during such work.

Friction

Friction can start a fire in many ways, including:

- Overheating of bearings;
- Slipping of drive belts;
- Overloading of machinery.

Such causes can be minimised by using well-designed and correctly rated machinery and by attention to cleanliness, regular inspection, maintenance and adequate supervision.

Electrical Sparks/Arcing

Electrical discharges from damaged or faulty appliances or wiring can ignite solid materials. This hazard can be minimised by good design, correctly sized equipment, which is adequately protected for its working environment, and an effective inspection and maintenance programme.

Housekeeping

Cleanliness and tidy working methods are essential in a building where high fire risk materials are kept. Cleaning schedules should be prepared for each part of the building and process. These should identify who is to carry out the work, how often, the equipment they should use, the precautions they should observe and how waste material is to be disposed of.

Arrangements should be made for the prompt removal and disposal of all defective and/or waste materials produced. Waste containers provided should preferably be made of metal and have captive lids. Particular attention should be paid to the regular emptying of all such containers holding high fire risk materials. Safe storage arrangements should be made for keeping waste and recovered material for disposal.

All surfaces on which deposits can accumulate should be regularly cleaned, with particular attention to moving parts and hot surfaces.

F - Special Precautions: Science

Putting out Burning Furnishings

Fires involving furnishings i.e. curtains, stools and bench tops, should be tackled only in the initial stages, if the fire is gaining a hold; the priority is the evacuation of the students. Any type of extinguisher may be used if electrical equipment is **not** involved, but water is the most effective agent in preventing re-ignition. If a fire is first reduced to smouldering with a non-water based extinguisher, water should then be used to complete extinction.

Putting out Burning Phosphorous

Water is a suitable extinguishing medium; it is usually most convenient to cover burning phosphorous with sand and then add water.

Putting out Flammable Liquid Fires

The source of the ignition should be turned off, if possible.

If a liquid is burning in a container such as a beaker, the preferred first treatment is to smother it with a fire blanket or fireproof mat. A carbon dioxide extinguisher may then be necessary to give complete extinction. The blanket or mat should be left in place while the area cools.

Very small liquid spills which are burning can again be smothered with a fire blanket. If a larger pool of liquid is on fire, tackle this with a fire extinguisher directing it towards the edge of the fire and sweeping towards the centre. Large fires can be better tackled by two people, each with an extinguisher, from different angles but not opposite each other.

Putting out Burning Flammable Liquid on Clothes

If burning liquid is spilt on a person's clothes, they should immediately be made to lie down with the flames underneath and a fire blanket or convenient garment pressed on top.

Putting out Gas Fires

A fire extinguisher should not be used on a gas jet, but only on residual fires which may be burning after the gas has ceased to flow.

Natural Gas

If it is possible to approach, shut off the supply; the main gas cock may have to be used and it is clearly better if this is in the room.

Hydrogen Cylinders

If it is possible to approach, shut off the supply at the main cylinder valve; the key should be on the valve at all times for this purpose. If for any reason it is not possible, evacuate the room.

Putting out Burning Metals

These could be small fires involving sodium, potassium, calcium, lithium, aluminium (NB Eye protection should already be in use). Smother with a large excess of dry sand and leave until really cool. Separate the sodium or potassium residues and dispose of them in propan-2-ol (isopropyl alcohol). In all cases, the remaining sand should be cautiously added to a bucket of water in a fume cupboard to decompose silicide's formed. Spontaneously flammable gases may form at this stage, but are not a hazard in an efficient fume cupboard.

Fire Precautions

Users:

- Fire doors should never be wedged open or fire fighting equipment used for anything other than its purpose;
- Plastic articles, such as trays, should be of fire retardant plastic. Flammable materials must be kept away from flames e.g. blinds should be used in preference to curtains to dim-out rooms and should be of fire-retardant materials;
- Flammable substances should be stored appropriately. Waste bins should be of metal and emptied regularly. Flammable articles such as paper and cartons should not be allowed to accumulate and should never be stored near exit routes, under stairs etc.

Fire Drills:

- Staff and students who happen to be in the laboratories during fire practices will participate in the normal evacuation drills. When the fire alarm sounds, technicians should see that gas is turned off at main stopcocks, that gas cylinders are returned to an agreed place and that any hazardous substances are locked up;
- Laboratory staff should hold regular practice drills for putting out clothing on fire and for putting out small bench fires;
- Fire-fighting equipment should be located near an exit door.

Fire Blankets

These should be provided in all laboratories where there is a risk of Class B fires, primarily for dealing with people who have burning flammable liquid spilt on their clothes. They are also the most effective treatment for flammable liquid fires in an open container.

Sand:

- Sand should be available for fighting small metal fires, but need not necessarily be in a 'fire bucket'; a pack of sand should be included in a chemical spill kit and may also be used for fire fighting;
- Water buckets are inappropriate for laboratory use because of the likelihood that electrical equipment will be involved.