

## Section 7

# Emergency Precautions and Procedures

### 7.01 GENERAL WARNING NOTICES

It is essential that the plant operator uses fully all the skills and resources at his disposal, including a study of the manufacturers' instructions. Anyone in control of industrial or commercial premises must prevent, or render inoffensive, any potentially harmful emissions into the atmosphere. Work must never be carried out under conditions where there is any element of danger if it is reasonably practicable to eliminate the risk.

High voltage and rotating parts can cause serious or fatal injury. Safe installation, operation and maintenance must be performed by qualified personnel. Familiarisation with and adherence to these instructions is recommended. It is important to observe safety precautions to protect personnel from possible injury. When reading the instructions contained in this publication, always make reference to instructions given by manufacturers of any associated plant. Act with care in accordance with prescribed procedures in handling and lifting equipment.

Disconnect all power sources before initiating any maintenance or repair. Do not leave control panels or junction boxes uncovered whilst power is on. Should it become necessary to do so, in the interest of rectifying faults, then only competent qualified personnel should be involved. Warning notices must be posted and the covers must be replaced as soon as possible.

#### CAUTION:

TAKE ALL PRECAUTIONS AGAINST ELECTRIC SHOCK BY SWITCHING OFF BETWEEN ALL TESTS AND ENSURING LOOSE WIRES ARE NOT IN CONTACT WITH ANY METALWORK OR IN DANGEROUS POSITIONS.

- Avoid contact with energised circuits or rotating parts. Ensure fan inlets are guarded.
- Be sure all equipment is properly protected to prevent access by unauthorised personnel in order to prevent possible accidents.
- Be sure all items removed are replaced in the correct order and in accordance with manufacturer's recommended practice and the equipment recommissioned.
- Avoid contact with capacitors until safe discharge procedures have been completed. Once a fault on an interlock has been detected, then the fault must be corrected before the unit is operated.

- Avoid extended exposure to equipment with high noise level.
- Ensure all tools used for maintenance are correct for the job and are in good order.
- Keep all working areas, plantroom and other areas containing equipment clear of obstructions, rubbish, spillages and inflammable goods at all times.
- All items of plant are controlled automatically. Ensure each and every unit is isolated electrically, before carrying out any maintenance, and switched OFF on the plant selection switches.
- Ensure suitable notices are used to advise which electrical circuit is isolated and why, or which piece of equipment is shut down for maintenance or repair. Always wear serviceable protective clothing appropriate for the job in hand, i.e. eye shields, face masks, gloves and ear protectors.
- Isolate electrical supplies and fuel lines, as required, before attempting to work on the combustion equipment. Post warning notices as necessary and ensure plant is sufficiently cooled and ventilated.
- Do not make repeated attempts to light a burner. If a flame cannot be established after two consecutive attempts, carry out an investigation into the cause. A succession of abortive attempts to fire the burner may result in the build up of an explosive mixture at some point in the gas pipework.
- Should an abnormal condition arise, either in the switchgear or its associated equipment and cables, then the following procedure must be adopted:
  - a) Immediately isolate from the supply any area of fault.
  - b) Should a fault have occurred in or adjacent to an incoming transformer panel, the associated HV circuit breaker must also be tripped.
  - c) In case of fire, the mains and standby supplies must be isolated.
  - d) Do not, under any circumstances, use water to put out a fire in or around electrical equipment.
  - e) For personal injury or electric shock, follow such instruction as laid down by the 'British Safety Council's publication: 'Treatment for Asphyxia including Electric Shock' and seek immediate medical advice and attention.
  - f) After a fault and prior to reinstatement, equipment must always be checked by a competent person, to ascertain the cause and any remedial action taken. As soon as possible thereafter the routine maintenance programme should be carried out. Work on HV equipment must always be carried out by authorised personnel only.

## 7.02 REPORTING ACCIDENTS

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1985 came into force in April 1986.

### FAILURE TO COMPLY WITH THEM IS A CRIMINAL OFFENCE.

Reporting accidents allows management to identify accident trends and take action where needed.

### IMMEDIATE NOTIFICATION

- If anybody dies or is seriously injured in an accident in connection with your business
- If there is a dangerous occurrence (such as an overturned crane or a burst pressure vessel)
- You must notify the appropriate authority as soon as possible (normally by phone).

### REPORTING

- If anybody is off work for more than three days as a result of an accident at work
- If you have had to notify any death, serious injury or dangerous occurrence.
- If a specified occupational disease is certified by a doctor

You must send a report to the appropriate authority **WITHIN SEVEN DAYS:**

### RECORD-KEEPING

You must keep a record of any accident, occurrence or case of disease required to be reported.

The forms you must use are:

- Form F2508 - for reporting accidents and dangerous occurrences.
- Form F2508A - for reporting cases of disease.

These forms are available from HMSO - You should obtain the forms now. Photocopies of the forms may be used.

In general, if your premises are office, shop, warehouse, or residential accommodation, the appropriate authority will be your local authority Environmental Health Department (see your local telephone book under the name of the 'Local Authority').

For other premises it will usually be the Health and Safety Executive (HSE).

Your nearest HSE office or local authority Environmental Health Department will provide you with these free booklets:

- Reporting an Injury or a Dangerous Occurrence (HSE 11)
- Reporting a Case of Disease (HSE 17)

### 7.03 EMERGENCY PRECAUTIONS - FIRE

All fire precautions must be observed. "NO SMOKING" notices must be displayed where necessary and rigidly obeyed.

1. Ensure that in ALL work areas, areas where work is being carried out, no oily rags, paper/packing or other fire hazards are allowed to accumulate.
2. Use non-flammable materials/liquids whenever possible.
3. Ensure that all flammable liquids are stored in strong, labelled containers with properly fitting tops.
4. Use earth leakage circuit breakers for electrical power tools. These cut off electrical current and provide protection against electrocution if a flex is cut. The circuit breakers must conform to BS 4293.
5. Places of work are covered by several acts of parliament. Your place of work should be provided with adequate escape routes, fire-fighting equipment and in most cases fire warning arrangements.
6. **YOU SHOULD NEVER:**
  - x Leave electrical appliances switched on and unattended.
  - x Disregard the manufacturers' operating and servicing instructions.
  - x Place combustible materials near or on electrical appliances.
  - x Leave electrical appliances plugged in and switched on at night if they are not designed for the purpose.
  - x Have more than one plug in one power socket.
  - x Use multi-point adaptors.
  - x Pass nails or screws through walls, ceilings or floor boards close to electrical equipment as you may damage wiring.
  - x Pull out plugs by the flex.
  - x Join two flexes other than by a purpose-made connector.
  - x Run flexes under carpets or rugs as they may become damaged and not be noticed.
  - x Use fuses rated higher than specified for the appliance or installation.
  - x Twist or bend flexes sharply.
7. **YOU SHOULD ALWAYS:**
  - ☛ Check your escape routes so that you know how to get out of the building safely in case of fire.
  - ☛ Learn the fire instructions and fire drill procedure.
  - ☛ Know how to raise the fire alarm. The alarm may consist of an electrical break glass or similar system, a telephone arrangement or a manual system.
  - ☛ Note the location of fire extinguishers and fire fighting equipment, the notes on how to use them, and what type of fires to use them on.
  - ☛ Ensure fire fighting routes are not obstructed and are always available for use by you and your colleagues. Do not use lifts in an emergency involving fire.
  - ☛ Ensure fire fighting equipment and fire warning facilities are not obstructed or obscured.
  - ☛ Remember you are responsible for your colleagues' safety as well as your own.

It is not the policy of the Fire Brigade to handle queries relating to fire precautions in places of work, with anybody other than the employers or their designated representatives. If you wish to discuss fire safety, it should be raised with your management, through the health and safety procedures operating within your place of work.

Should a fire occur, the most likely first general indication of this will be annunciation through the alarm system. The first action should be to determine the zone affected by the fire, localised by the installation alarm pressure switch. Next ensure that an orderly evacuation of personnel is instigated and the Fire Brigade informed.

Audible alarms should not be prematurely muted as it is important that personnel are warned of any residual hazard.

Following the arrival of the Fire Brigade, the supervision of the system should be placed under their jurisdiction.

**ACTION FOLLOWING A FIRE:** The following procedure is recommended when a fire has occurred:

#### DETAILS OF OPERATION

1. Locate outbreak zone.
2. Carefully establish that fire has been completely extinguished.
3. Silence the alarm gong by closing alarm silencing valve.
4. Close the sprinkler installation pipework flow/test drain valve.
5. Open the sprinkler installation pipework drain valve.
6. On completion of draining the installation pipework, replace burst sprinkler heads as quickly as possible.
7. Recharge installation in accordance with the recommissioning instructions.

**BEFORE YOU TACKLE A FIRE:** Many people put out small fires quite safely. By doing so they prevent serious injury or damage. But some people are injured and even die while trying to tackle fires which should have been left to the experts. Here is a simple fire fighting code to help you decide whether to put out or to get out.

- Always get everyone out and call the Fire Brigade. Only tackle a fire in the very early stages.
- Always put your own and other people's safety first and never risk injury to fight fires. Always make sure you can escape if you need to and remember that smoke can kill.

#### IF IN DOUBT, GET OUT.

- Never let a fire get between you and your way out. If you have any doubt about whether your extinguisher is suitable for the fire, do NOT use it.

#### GET OUT.

- Always remember that fire extinguishers are only for FIRST AID fire fighting. Never tackle the fire if it is starting to spread to other items in the room or if the room is filling with smoke.

#### IF IN DOUBT, GET OUT.

- If you cannot put out the fire or if your extinguisher runs out - some last only for a few seconds - get out of the building immediately. Close doors and windows as you go, if it is safe to do so.

**DO NOT RISK INJURY TO FIGHT FIRE. IF IN DOUBT, GET OUT.  
MAKE SURE THE FIRE BRIGADE HAS BEEN CALLED.**

#### ELECTRICAL APPLIANCE FIRES

NOTE: Dry powder does not penetrate the spaces in equipment easily and the fire may flare up again.

1. If possible turn off the power (pull out the plug or, if you cannot reach the socket safely, switch off at the mains).
2. Use a HALON 1211 (BCF), CO<sub>2</sub>, AFFF, multi-purpose dry powder or water extinguisher.

#### WARNING:

DO NOT USE WATER-BASED EXTINGUISHERS (INCLUDING AFFF) UNLESS THE APPLIANCE IS DISCONNECTED FROM THE MAINS. YOU MAY RISK ELECTRIC SHOCK.

#### IF SOMEONE'S CLOTHES ARE ON FIRE

1. Get the victim down on to the floor quickly, otherwise, as the flames rise, they will spread up to the victim's face. (This will cause severe disfiguring burns and the flames may damage the victim's lungs if inhaled.)
2. If water is READILY available nearby, douse the flames (this will also cool the burns). But do not waste time filling up containers with water if the flames can be smothered more quickly in some other way.
3. If water is NOT readily available, wrap the victim in a fire blanket or rug until the flames are smothered.
4. Once the flames are out, check that there is no smouldering material.
5. Get medical help immediately.

#### WARNING:

DO NOT USE WATER IF THE CLOTHES HAVE BEEN SET ON FIRE BY AN ELECTRIC HEATER AND IF THE VICTIM IS STILL NEAR THE HEATER - YOU MAY ELECTROCUTE THE VICTIM AND YOURSELF.

#### WARNING:

TOXIC GASES WHICH MAY BE PRODUCED BY THE FIRE AND THE USE OF HALON 1211 (BCF) OR CO<sub>2</sub> MAY CAUSE BREATHING DIFFICULTIES IF YOU STAY IN THE AREA. IF THIS HAPPENS LEAVE THE AREA IMMEDIATELY, OPEN ALL THE DOORS AND WINDOWS AND DO NOT RETURN UNTIL THE FIRE BRIGADE SAY IT IS SAFE.

Fire extinguishers are designed to be reliable and do not normally need much maintenance. However make a point of checking every month that your extinguisher or fire blanket is in its right place and has not been used or damaged. Aerosol extinguishers may need to be replaced at intervals (see manufacturer's instructions). Otherwise you should have your extinguisher properly serviced once a year by experts. Go to a firm registered by the Government approved British Approvals for Fire Equipment.

The manufacturer's instructions will tell you what you need to do to keep your extinguisher in good working order. Once an extinguisher has been used, even if only partially, it must be recharged according to the manufacturer's instructions.

Fire blankets conforming to BS 6575 are marked to show whether they should be thrown away after use, or whether they can be used again after cleaning, in accordance with the manufacturer's instructions.

Read the instructions and make sure you understand how to use your extinguisher or fire blanket before fire breaks out.

Make sure that everyone knows what to do if a fire starts.

Practise walking through your main escape route, and remember you may all have to do it in the dark under very unpleasant smoky conditions.

Plan other ways of escaping in case your main route becomes blocked by fire or smoke.

On the following page is a chart showing which fire extinguisher to use under various circumstances. Please note that water extinguishers are usually coloured signal red. Other extinguishers may be predominantly red with a second colour to indicate the extinguishing medium. Some manufacturers provide a colour-coded label, others colour-code the entire body of the extinguisher.

## WHICH EXTINGUISHER TO USE

COLOUR CODE* AND TYPE	HOW IT PUTS OUT FIRES	BEST FOR	HOW TO USE
RED* WATER	Mainly by cooling burning material.	Class A fires involving solids. Danger: Do not use on live electrical appliances or on burning fat or oil.	Point the jet at the base of the flames and keep it moving across the area of the fire. Seek out any hot spots after the main fire is out.
BLUE MULTI-PURPOSE DRY POWDER	Knocks down flames and, on burning solids, melts to form a skin smothering the fire. Some cooling effect.	Class A fires involving solids and class B fires involving liquids. Safe on live electrical equipment although does not penetrate the spaces in equipment easily and the fire may flare up again. Do not use on burning fat or oil.	Point the jet or discharge horn at the base of the flames and, with a rapid sweeping motion, drive the fire towards the far edge until all the flames are out. If the extinguisher has a shut-off control wait until the air clears and if you can still see the flame, attack the fire again. Warning: Smouldering material, in deep seated fires such as upholstery, can cause the fire to start up again.
BLUE STANDARD DRY POWDER	Knocks down flames	Class B fires involving liquids but do not use on burning fat or oil fires. Safe on live electrical equipment although does not readily penetrate spaces inside equipment and the fire may re-ignite.	Point the jet or discharge horn at the base of the flames and, with a rapid sweeping motion, drive the fire towards the far edge until all the flames are out. If the extinguisher has a shut-off control wait until the air clears and if you can still see the flame, attack the fire again. This type of extinguishing medium does not cool the fire very well and you need to watch out that the fire does not start up again.
GREEN HALON 1211 (BCF)	Vaporising liquified gas giving rapid flame knockdown by chemically inhibiting combustion.	Class B fires involving liquids but do not use on burning fat or oil. Clean and light, can also be used on small surface-burning Class A fires involving liquids. Do not use on burning fat or oil	Warning: This type of extinguisher does not cool the fire very well and you need to watch out that the fire does not start up again. Danger: Fumes from halon 1211 (BCF) extinguishers can be harmful to user in confined spaces or if used on hot metal: ventilate the area as soon as the fire has been controlled
CREAM AFFF (AQUEOUS FILM FORMING F O A M ) (MULTI-PURPOSE)	Forms a fire extinguishing film over the surface of a burning liquid. Has a cooling action with a wider extinguishing application than water on solid combustible materials.	Class A fires involving solids and Class B fires involving liquids. Do not use on burning fat or oil.	For Class A fires - use as directed for water extinguishers. For Class B fires - use as directed for foam extinguishers.
CREAM FOAM	Forms a blanket of foam over the surface of a burning liquid and smothers the fire.	Class B fires involving liquids. Warning: not suitable for all liquids - check the instructions. Do not use on burning fat or oil.	Do not aim the jet straight into the liquid. Where the liquid on fire is in a container, point the jet at the inside edge of the container or on a nearby surface above the burning liquid. Allow the foam to build up and flow across the liquid.
BLACK CARBON DIOXIDE CO <sub>2</sub>	Vaporising liquified gas which smothers flames by displacing oxygen in the air.	Class B fires involving liquids. But do not use on burning fat or oil. Clean, effective and safe on live electrical equipment.	Warning: This type of extinguisher does not cool the fire very well and you need to watch out that the fire does not start up again. Danger: Fumes from CO <sub>2</sub> extinguishers can be harmful to user in confined spaces; ventilate the area as soon as the fire has been controlled.
FIRE BLANKET	Smothering	Class A fires involving solids and Class B fires involving liquids. Good for small fires in clothing and burning fat or oil provided the blanket completely covers the fire.	Place carefully over fire. Keep your hands shielded from the fire. Do not wait the fire toward you.

\* Water extinguishers are usually coloured signal red. Other extinguishers may be predominantly red with a second colour to indicate the extinguishing medium. Some manufacturers provide a colour-coded label, others colour-code the entire body of the extinguisher



#### 7.04 ADVICE ON FIRST AID + TREATMENT

NOTE: Local branches of the Red Cross, St. John's Ambulance and St. Andrew's Ambulance run evening courses which qualify for Trained First Aider Certificate. Compiled mainly from 1008 issued by the Department of Employment.

This advice is concerned only with first-aid. It is not a substitute for attention by a doctor or a trained nurse. If medical aid is going to be needed urgently, send for a doctor or ambulance immediately. Always see that the first aid box is adequately stocked and ALWAYS replace articles which have been used. Where more than five persons are working, an appropriate first aid box must be provided with the name of the person responsible on it. Where there are more than fifty persons working, a trained first aider must be in charge of the box.

GENERAL: If the casualty has stopped breathing from whatever cause, artificial respiration must be started at once, before any other treatment is given, and should be continued until breathing is restored. Where there is shock, keep the casualty lying down and comfortable. Cover with a light blanket or clothing, but do not apply hot water bottles. Do not give drink or anything by mouth if there seems to be an internal injury. Wash your hands before treating wounds, burns or eye injuries.

#### 7.05 ELECTRIC SHOCK TREATMENT

Switch OFF the current. If this is impossible, free the person using something made of rubber, cloth or wood or a folded newspaper; use the casualty's own clothing if dry. Do not touch his skin before the current is switched off. If breathing is failing or has stopped, give artificial respiration and continue for some hours if necessary. Get help and send for a doctor.

INSTRUCTIONS FOR RESCUE BREATHING: IMMEDIATE ATTENTION is essential in cases of severe electric shock as the nerves controlling breathing and heart action are affected. The casualty may become unconscious and unless prompt aid is given he may suffer irreparable brain damage. Do not delay treatment by calling for a doctor or other assistance; this can be done if help is available or when the casualty recovers.

DO NOT TOUCH an injured person with your bare hands until you are sure that he is no longer in contact with a live conductor. If he is not clear, switch off the current.

ARTIFICIAL RESPIRATION: Simple and efficient methods of artificial respiration using the rescuer's breath to revive the casualty are carried out in the following manner:

##### SPEED IS ESSENTIAL

##### MOUTH TO MOUTH METHOD:

1. Place the casualty on his back and sit or kneel by the side of his head. Hold the head in both hands, one pressing it backwards, the other pushing the lower jaw upwards and forwards. This is important to ensure an unrestricted air passage to the casualty's lungs.
2. Pinch the casualty's nose closed with one hand.
3. Take a deep breath, open your mouth wide and seal your lips around the casualty's mouth. Blow air steadily into the casualty's lungs until his chest rises.

4. Remove your mouth and turn your face to one side to take another breath. The casualty will automatically breathe out through his mouth. **SIX BREATHS** should be given as quickly as possible, then repeat the cycle at six second intervals.

**MOUTH TO NOSE METHOD:** This is an alternative method and if the casualty's mouth cannot be opened or an adequate seal cannot be maintained between your mouth and his, shown by the casualty's chest not rising, it must be adopted. The initial procedure is as described in the mouth to mouth method. Then close the casualty's mouth with your hand, take a deep breath, seal your mouth round his nose and breathe out steadily. Release his mouth when you take the next breath to enable him to breathe out.

**GENERAL PRECAUTIONS:** A thin handkerchief may be placed over the casualty's mouth or nose if desired. If it is not possible to blow into the casualty's lungs, look for and remove any obstruction which may be in his mouth. Breathe less strongly into a child and only gently into a baby.

**KEEP THE CASUALTY'S HEAD PRESSED BACK ALL THE TIME.**

**AFTER RECOVERY** the casualty should not be moved until he is breathing normally without assistance. He should be seen by a doctor before being allowed to walk. No stimulant should be given unless ordered by a doctor. Do not remove burnt clothing, and do not break blisters. Apply sterilised dressings. When recovered, the patient may be allowed to sip cold water, tea, coffee or other liquid but not alcohol. Cover him with a rug or coat.