

Safety practice

Objectives: At the end of this lesson you shall be able to

- state the causes for accidents in general terms
- state the safe attitudes
- list out the four basic categories of safety signs.

Causes for accidents: Normally accidents do not just happen. They are caused.

Causes for accidents are many. Some of the important causes are listed below.

- Unawareness of danger
- Disregard for safety
- Negligence
- Lack of understanding of proper safety procedures
- Untidy condition of workplace
- Inadequate light and ventilation
- Improper use of tools
- Unsafe conditions

Safe attitudes: People's attitudes govern what they do or fail to do. In most cases where someone is working with unsafe equipment or in an unsafe situation, somebody has allowed that state of affairs to come about by something they have done or failed to do.

Most accidents don't just happen; they are caused by people who (for example) damage equipment or see it is faulty but don't report it, or leave tools and equipment lying about for other people to trip over.

Responsibilities: Safety doesn't just happen - it has to be organised and achieved like the work-process of which it forms a part. The law states that both an employer and his employees have a responsibility in this behalf.

Employer's responsibilities: The effort a firm puts into planning and organising work, into training people, into engaging skilled and competent workers, maintaining plant and equipment, and checking, inspecting and keeping records- all of this contributes to the safety in the workplace.

The employer will be responsible for the equipment provided, the working conditions, what employees are asked to do, and the training given.

Employee's responsibilities: You will be responsible for the way you use the equipment, how you do your job, the use you make of your training, and your general attitude to safety.

A great deal is done by employers and other people to make your working life safer; but always remember you are responsible for your own actions and the effect they have on others. You must not take that responsibility lightly.

Rules and procedures at work: What you must do, by law, is often included in the various rules and procedures laid down by your employer. They may be written down, but more often than not, are just the way a firm does things - you will learn these from other workers as you do your job. They may govern the issue and use of tools,

protective clothing and equipment, reporting procedures, emergency drills, access to restricted areas, and many other matters. Such rules are essential; they contribute to the efficiency and safety of the job.

Safety signs: As you go about your work on a construction site you will see a variety of signs and notices. Some of these will be familiar to you - a 'no smoking' sign for example; others you may not have seen before. It is up to you to learn what they mean - and to take notice of them. They warn of the possible danger, and must not be ignored.

Safety signs fall into four separate categories. These can be recognised by their shape and colour. Sometimes they may be just a symbol; other signs may include letters or figures and provide extra information such as the clearance height of an obstacle or the safe working load of a crane.

The four basic categories of signs are as follows. (Fig.1)

- prohibition signs
- mandatory signs
- warning signs
- information signs

Prohibition signs



Shape
Colour

Circular.
Red border and cross bar.
Black symbol on white background.

Meaning
Example

Shows it must not be done.
No smoking.

Mandatory signs



Shape
Colour

Circular.
White symbol on blue background.

Meaning
Example

Shows what must be done.
Wear hand protection.

Warning signs



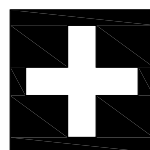
Shape
Colour

Triangular.
Yellow background with black border and symbol.

Meaning
Example

Warns of hazard or danger.
Caution, risk of electric shock.

Information signs



Shape
Colour

Square or oblong.
White symbols on green background.

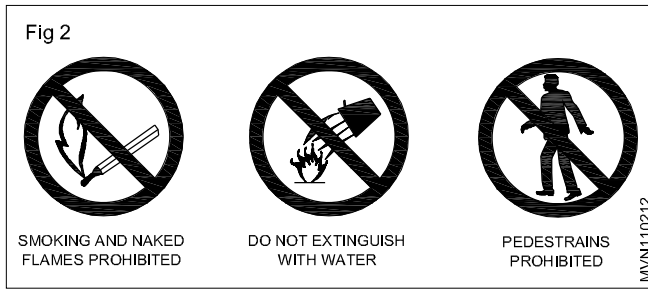
Meaning

Indicates or gives information of safety provision.

Example

First aid point.

Prohibition signs (Fig 2)



Mandatory signs (Fig 3)



Warning signs (Fig 4)

Questions about your safety

Do you know the general safety rules that cover your place of work?

Are you familiar with the safety laws that cover your particular job?

Do you know how to do your work without causing danger to yourself, your workmates and the general public?

Are the plant, machinery and tools that you use really safe? Do you know how to use them safely and keep them in a safe condition?

Do you wear all the right protective clothing, and have you been issued with all the necessary safety equipment?

Have you been given all the necessary safety information about the materials used?



Have you been given training and instruction to enable you to do your job safely?

Do you know who is responsible for safety at your place of work?

Do you know who are the appointed 'Safety Representatives'?

- Stop the machine before changing the speed.
- Disengage the automatic feeds before switching off.
- Check the oil level before starting the machine.
- Before starting the machine, move the ram by hand to ensure that the ram or tool-handler does not strike the workpiece or table.
- Never start a machine unless all the safety guards are in position.
- Take measurements only after stopping the machine.
- Use wooden planks over the bed while loading and unloading heavy jobs.
- Do not stop the machine before the finish of the cutting stroke.

Safety is a concept, understand it.

Safety is a habit, cultivate it.

Knowledge of personal safety and general precautions observed in the shop

Objectives: At the end of this lesson you shall be able to

- state the is personal protective equipment and its purpose
- name the two categories of personal protective equipment
- list the most common type of personal protective equipment
- list the conditions for selection of personal protective equipment
- state the safety precaution in handling diesel machines.

Personal Protective Equipment (PPE)

Devices, equipment, clothing are used by the employees, as a last resort, to protect against hazards in the workplace. The primary approach in any safety effort is that the hazard to the workmen should be eliminated or controlled by engineering methods rather than protecting the workmen through the use of personal protective equipment (PPE). Engineering methods could include design change, substitution, ventilation, mechanical handling, automation, etc.

The Factories Act, 1948 and several other labour legislations 1996 have provisions for effective use of appropriate types of PPE.

Ways to ensure workplace safety and use personal protective equipment (PPE) effectively.

- Workers to get up-to-date safety information from the regulatory agencies that workplace safety in their specific area.
- To use all available text resources that may be in work area and for applicable safety information on how to use PPE best.
- When it comes to the most common types of personal protective equipment, like goggles, gloves or bodysuits, these items are much less effective if they are not worn at all times, or whenever a specific danger exists in a work process. Using PPE consistent will help to avoid some common kinds of industrial accidents.
- Personal protective gear is not always enough to protect workers against workplace dangers. Knowing more about the overall context of your work activity can help to fully protect from anything that might threaten health and safety on the job.
- Inspection of gear thoroughly to make sure that it has the standard of quality and adequately protect the user should be continuously carried out.

Categories of PPEs

Depending upon the nature of hazard, the PPE is broadly divided into the following two categories:

- 1 **Non-respiratory:** Those used for protection against injury from outside the body, i.e. for protecting the head, eye, face, hand, arm, foot, leg and other body parts
- 2 **Respiratory:** Those used for protection from harm due to inhalation of contaminated air.

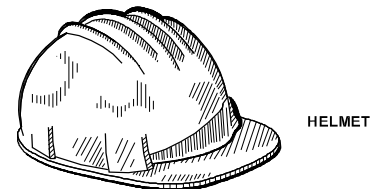
They are to meet the applicable BIS (Bureau of Indian Standards) standards for different types of PPE.

The guidelines on 'Personal Protective Equipment' is issued to facilitate the plant management in maintaining an effective programme with respect to protection of persons against hazards, which cannot be eliminated or controlled by engineering methods listed in table1.

Table1

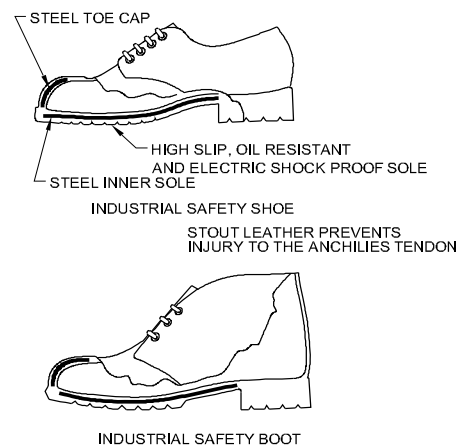
No.	Title
PPE1	Helmet
PPE2	Safety footwear
PPE3	Respiratory protective equipment
PPE4	Arms and hands protection
PPE5	Eyes and face protection
PPE6	Protective clothing and coverall
PPE7	Ears protection
PPE8	Safety belt and harnesses

Fig 1



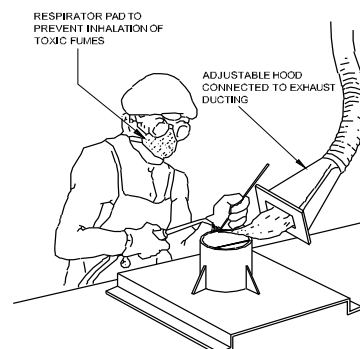
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Fig 2



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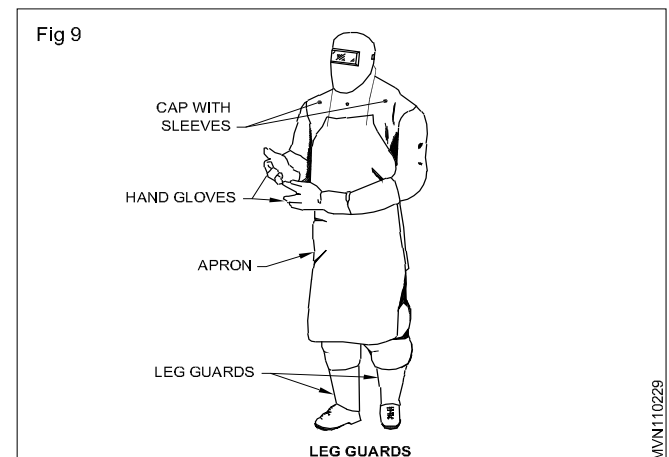
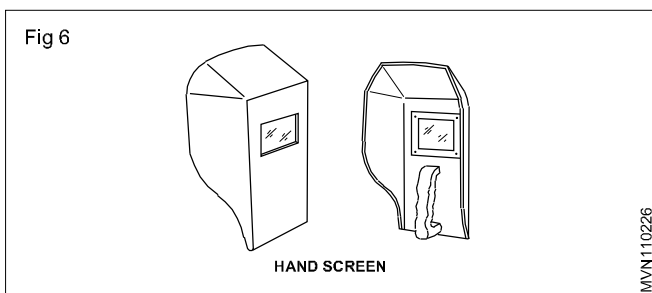
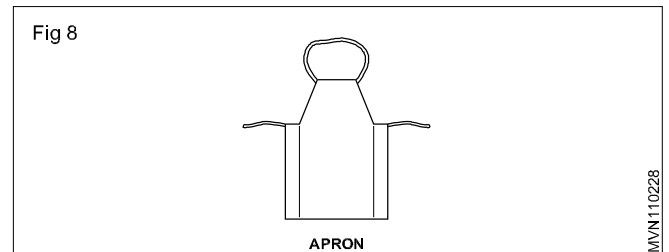
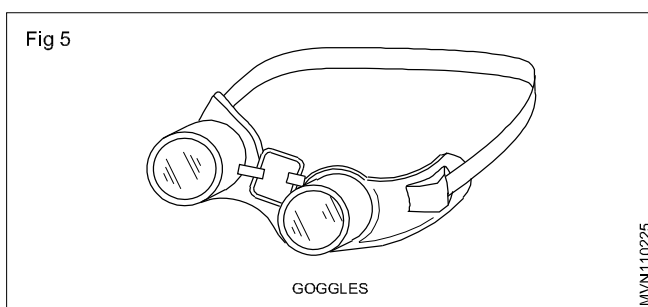
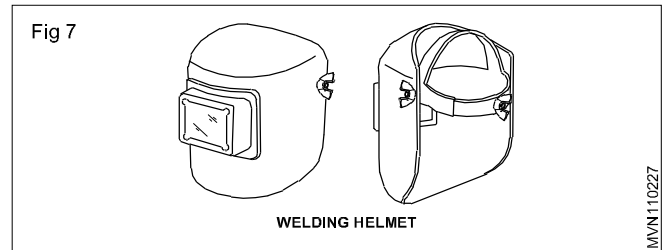
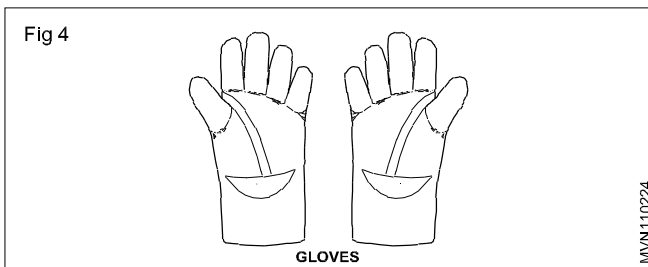
Fig 3



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Common type of personal protective equipments and their uses and hazards are as follows

Types of protection	Hazards	PPE to be used
Head protection (Fig 1)	<ol style="list-style-type: none"> 1. Falling objects 2. Striking against objects 3. Spatter 	Helmets
Foot protection (Fig 2)	<ol style="list-style-type: none"> 1. Hot spatter 2. Falling objects 3. Working wet area 	Leather leg guards Safety shoes Gum boots
Nose (Fig 3)	<ol style="list-style-type: none"> 1. Dust particles 2. Fumes/ gases/ vapours 	Nose mask
Hand protection (Fig 4)	<ol style="list-style-type: none"> 1. Heat burn due to direct contact 2. Blows sparks moderate heat 3. Electric shock 	Hand gloves
Eye protection (Fig 5, Fig 6)	<ol style="list-style-type: none"> 1. Flying dust particles 2. UV rays, IR rays heat and High amount of visible radiation 	Goggles Face shield Hand shield Head shield
Face Protection (Fig 6, Fig 7)	<ol style="list-style-type: none"> 1. Spark generated during Welding, grinding 2. Welding spatter striking 3. Face protection from UV rays 	Face shield Head shield with or without ear muff Helmets with welders screen for welders
Ear protection (Fig 7)	<ol style="list-style-type: none"> 1. High noise level 	Ear plug Ear muff
Body protection (Fig 8, Fig 9)	<ol style="list-style-type: none"> 1. Hot particles 	Leather aprons



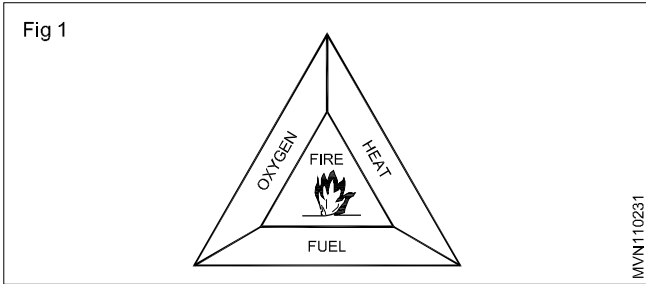
Safety practice - fire extinguishers

Objectives: At the end of this lesson you shall be able to

- state the effects of a fire break out
- state the causes for fire in a workshop
- state the conditions required for combustion relevant to fire prevention
- state the general precautionary measures to be taken for prevention of fire.

Fire is the burning of combustible material. It might injure people, and sometimes cause loss of life as well. Hence, every effort must be made to prevent fire.

The following are the three factors that must be present in combination for a fire to continue to burn. (Fig 1)



Fuel: Any substance, liquid, solid or gas will burn, if there is oxygen and high enough temperatures.

Heat: Every fuel will begin to burn at a certain temperature. It varies and depends on the fuel. Solids and liquids give off vapour when heated, and it is this vapour which ignites. Some liquids do not have to be heated as they give off vapour at normal room temperature say 15°C, eg. petrol.

Oxygen: Usually exists in sufficient quantity in air to keep a fire burning.

Extinguishing of fire: Isolating or removing any of these factors from the combination will extinguish the fire. There are three basic ways of achieving this.

- **Starving** the fire of fuel removes this element.
- **Smothering** - ie. isolate the fire from the supply of oxygen by blanketing it with foam, sand etc.
- **Cooling** - use water to lower the temperature.

Removing any one of these factors will extinguish the fire.

Preventing fires: The majority of fires begin with small outbreaks which burn unnoticed until they have a secure hold. Most fires could be prevented with more care and by following some simple common sense rules.

Accumulation of combustible refuse (cotton waste soaked with oil, scrap wood, paper, etc.) in odd corners are a fire risk. Refuse should be removed to collection points.

The cause of fire in electrical equipment is misuse or neglect. Loose connections, wrongly rated fuses, over loaded circuits cause overheating which may in turn lead to a fire. Damage to insulation between conductors in cables causes fire.

Clothing and anything else which might catch fire should be kept well away from heaters. Make sure that the heater is shut off at the end of the working day.

Highly flammable liquids and petroleum mixtures (thinner, adhesive solutions, solvents, kerosene, spirit, LPG gas etc.) should be stored in the flammable material storage area.

Blowlamps and torches must not be left burning when they are not in use.

Extinguishing fires: Fires are classified into four types in terms of the nature of fuel.

Different types of fire have to be dealt with in different ways and with different extinguishing agents.

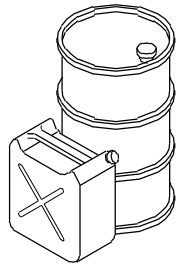
An extinguishing agent is the material or substance used to put out the fire, and is usually (but not always) contained in a fire extinguisher with a release mechanism for spraying into the fire.

It is important to know the right type of agent for extinguishing a particular type of fire; using a wrong agent can make things worse. There is no classification for 'electrical fires' as such, since these are only fires in materials where electricity is present.

Fuel	Extinguishing
<p>Fig 2</p> <p style="text-align: center;">CLASS 'A' FIRE</p> <p>WOOD</p> <p>CLOTH</p> <p>PAPER</p> <p style="text-align: right; font-size: small;">MVN110232</p>	<p>Most effective ie. cooling with water. Jets of water should be sprayed on the base of the fire and then gradually upwards.</p>

Fig 3

CLASS 'B' FIRE



FLAMMABLE LIQUIDS AND LIQUIFIABLE SOLIDS

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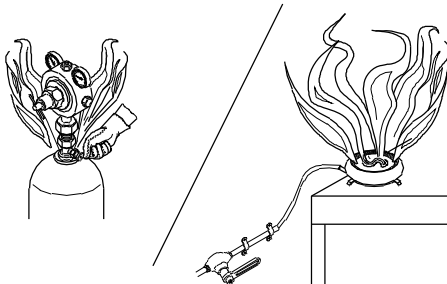
Should be smothered. The aim is to cover the entire surface of the burning liquid. This has the effect of cutting off the supply of oxygen to the fire.

Water should never be used on burning liquids.

Foam, dry powder or CO₂ may be used on this type of fire.

Fig 4

CLASS 'C' FIRE



LIQUIFIED GAS

GAS

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Extreme caution is necessary in dealing with liquefied gases. There is a risk of explosion and sudden outbreak of fire in the entire vicinity. If an appliance fed from a cylinder catches fire - shut off the supply of gas. The safest course is to raise an alarm and leave the fire to be dealt with by trained personnel.

Dry powder extinguishers are used on this type of fire.

Special powders have now been developed which are capable of controlling and/or extinguishing this type of fire.

Fig 5

CLASS 'D' FIRE



METALS

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The standard range of fire extinguishing agents is inadequate or dangerous when dealing with metal fires.

Fire on electrical equipment.

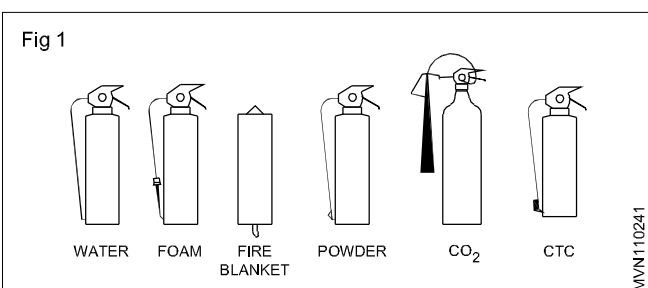
Halon, Carbon dioxide, dry powder and vapourising liquid (CTC) extinguishers can be used to deal with fires in electrical equipment. Foam or liquid (eg. water) extinguishers must not be used on electrical equipment under any circumstances.

Types of fire extinguishers

Objectives: At the end of this lesson you shall be able to

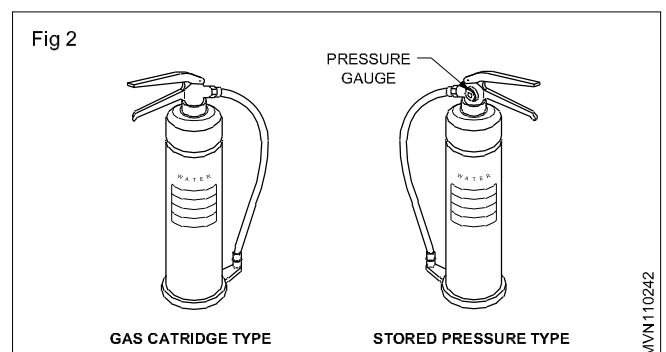
- distinguish different types of fire extinguishers
- determine the correct type of fire extinguisher to be used based on the class of fire
- describe the general procedure to be adopted in the event of a fire.

Many types of fire extinguishers are available with different extinguishing 'agents' to deal with different classes of fires. (Fig 1)



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Water-filled extinguishers: There are two methods of operation. (Fig 2)

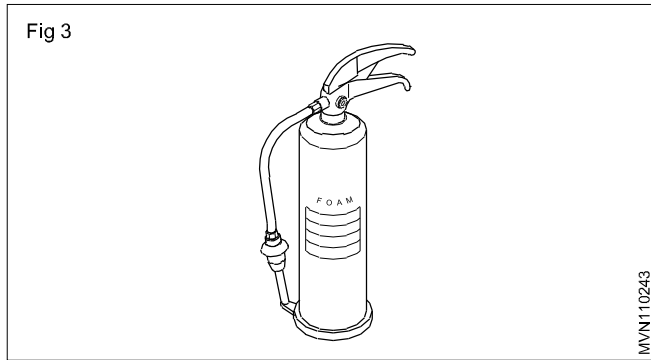


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- Gas cartridge type
- Stored pressure type

With both methods of operation the discharge can be interrupted as required, conserving the contents and preventing unnecessary water damage.

Foam extinguishers (Fig 3): These may be of stored pressure or gas cartridge types. Always check the operating instructions on the extinguisher before use.

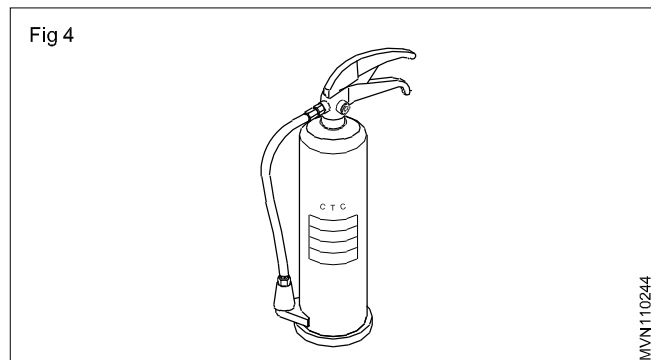


Most suitable for

- flammable liquid fires
- running liquid fires.

Must not be used on fires where electrical equipment is involved.

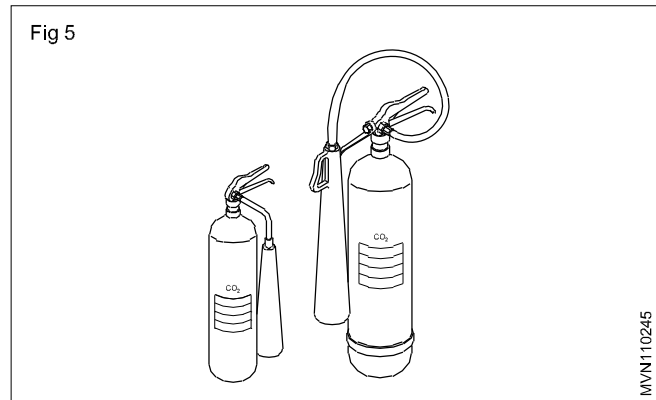
Dry powder extinguishers (Fig 4): Extinguishers fitted with dry powder may be of the gas cartridge or stored pressure type. Appearance and method of operation is the same as that of the water-filled one. The main distinguishing feature is the fork shaped nozzle. Powders have been developed to deal with class D fires.



Carbon dioxide (CO₂): This type is easily distinguished by the distinctively shaped discharge horn. (Fig 5).

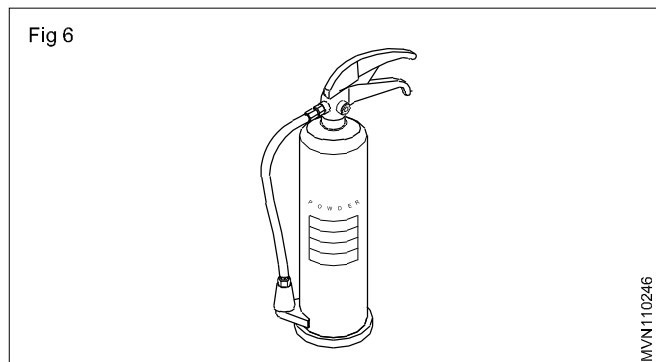
Suitable for Class B fires. Best suited where contamination by deposits must be avoided. Not generally effective in open air.

Always check the operating instructions on the container before use. Available with different gadgets of operation such as - plunger, lever, trigger etc.



Halon extinguishers (Fig 6): These extinguishers may be filled with carbon-tetrachloride and Bromochlorodifluoro methene (BCF). They may be either gas cartridge or stored pressure type.

They are more effective in extinguishing small fires involving pouring liquids. These extinguishers are particularly suitable and safe to use on electrical equipment as the chemicals are electrically non-conductive.



The fumes given off by these extinguishers are dangerous, especially in confined space.

The general procedure in the event of a fire

- Raise an alarm.
- Turn off all machinery and power (gas and electricity).
- Close the doors and windows, but do not lock or bolt them. This will limit the oxygen fed to the fire and prevent its spreading.
- Try to deal with the fire if you can do so safely. Do not risk getting trapped.
- Anybody not involved in fighting the fire should leave calmly using the emergency exits and go to the designated assembly point. Failure to do this may mean that some person being unaccounted for and others may have to put themselves to the trouble of searching for him or her at risk to themselves.

Elementary first-aid

Objectives: At the end of this lesson you shall be able to

- **define first aid**
- **list out the first aid key points**
- **describe the responsiveness.**

First aid is defined as the immediate care and support given to an acutely injured or ill person, primarily to save life,

First aid procedure often consists of simple and basic life saving techniques that an individual performs with proper training and knowledge.

The key aims of first aid can be summarized in three key points:

- **Preserve life:** If the patient was breathing, a first aider would normally place them in the recovery position, with the patient learnt over on their side, which also has the effect of clearing the tongue from the pharynx. The first aider will be taught to deal with this through a combination of 'back slaps' and 'abdominal thrusts'. Once the airway has been opened, the first aider would assess to see if the patient is breathing.
- **Prevent further harm:** Also sometimes called prevent the condition from worsening, or danger of further injury, this covers both external factors, such as moving a patient away from any cause of harm, and applying first aid techniques to prevent worsening of the condition, such as applying pressure to stop a bleed becoming dangerous.
- **Promote recovery:** First aid also involves trying to start the recovery process from the illness or injury, and in some cases might involve completing a treatment, such as in the case of applying a plaster to a small wound.

ABC of first aid

ABC stands for airway, breathing and circulation.

- **Airway:** Attention must first be brought to the airway to ensure it is clear. Obstruction (choking) is a life-threatening emergency.
- **Breathing:** Breathing if stops, the victim may die soon. Hence means of providing support for breathing is an important next steps. There are several methods practiced in first aid.
- **Circulation:** Blood circulation is vital to keep person alive. The first aiders now trained to go straight to chest compressions through CPR methods.

When providing first aid one needs to follow some rule. There are certain basic norms in teaching and training students in the approach and administration of first aid to sick and injured.

Important guideline for first aiders

Evaluate the situation

Are there things that might put the first aider at risk. When faced with accidents like fire, toxic smoke, gasses, an unstable building, live electrical wires or other dangerous scenario, the first aider should be very careful not to rush into a situation, which may prove to be fatal.

Avoid moving the victim

Avoid moving the victim unless they are immediate danger. Moving a victim will often make injuries worse, especially in the case of spinal cord injuries.

Call emergency services

Call for help or tell someone else to call for help as soon as possible. If alone at the accident scene, try to establish breathing before calling for help, and do not leave the victim alone unattended.

Determine responsiveness

If a person is unconscious, try to rouse them by gently shaking and speaking to them.

If the person remains unresponsive, carefully roll them on the side (recovery position) and open his airway.

- Keep head and neck aligned.
- Carefully roll them onto their back while holding hishead.

First aid

- Call EMERGENCY number.
- Check the person's airway, breathing, and pulse frequently. If necessary, begin rescue breathing and CPR.
- If the person is breathing and lying on the back and after ruling out spinal injury, carefully roll the person onto the side, preferably left side. Bend the top leg so both hip and knee are at right angles. Gently tilt the head back to keep the airway open. If breathing or pulse stops at any time, roll the person on to his back and begin CPR.
- If there is a spinal injury, the victims position may have to be carefully assessed. If the person vomits, roll the entire body at one time to the side. Support the neck and back to keep the head and body in the same position while you roll.
- Keep the person warm until medical help arrives.

Safe disposal of toxic dust

Objectives: At the end of this lesson you shall be able to

- list the waste material in a work shop
 - explain the methods of disposal of waste material.
-

Introduction

The Automobiles produces fumes containing unburnt gases such as carbon-monoxide, nitrogen oxide and other gases which are harmful to human health. Hence a systematic and scientifically designed methods are adopted for safe disposal of such toxic waste.

Dust from vehicle components to be blown into the air, since such dust floating in air for many hours, may cause harm to people who breath unknowingly.

Brake and clutch components produces dust, when used compressed air jet to clean them. While cleaning conforming the PPE to safety regulation & policies. This includes overall coat, Face mask, safety goggles for eyes earmuffs & earplug for ear protection, rubber gloves & barrier cream for hand and valved respirator for breathing.

Some auto parts having asbestos, is a toxic material, which cause lung cancer. Airborne dust in workshop leads to asthma and throat infections. Do not use compressed air to clean dust from various components & parts of the

Vehicle. Solvent used for cleaning can also form a toxic waste. Wash work cloths separately from other cloths so that toxic dust does not get transfer to other clothes. After cleaning a vehicle, there are certain chemicals present in this vehicle diet which turns toxic. To eliminate the toxic waste, create small diet piles and dispose them spontaneous rather than waiting for big diet pile till the end of the day. Workshop diet is best cleaned using a water hose, which does not allow diet to fully. But the waste water must be caught in a sledge pit and not into the storm water drain. Vacuum cleaner is a best device control toxic waste. Providing high speed exhaust ventilation can solve toxic diet.

Use grease which can not re-used is stored in a separate container and stored with unique identification. In a similar manner waste oil is stored in separate container, labeled 'Waste oil' and stored in different location, meant for disposal used diesel oil and kerosene are also stored in separate containers and kept at disposal area.

Safety disposal of used engine oil

Objectives: At the end of this lesson you shall be able to

- state the purpose of disposal used oil
 - state the method of safety disposal of used oil.
-

Waste oil

The waste oils, derived from fuels or lubricants, originally come from petroleum oil, sometimes known as mineral oils. Many lubricants may also contain synthetic components.

Waste oil is harmful to the environment and some, for example used engine oils, may cause cancer. so it needs to be managed carefully. You may need to account for Health and Safety guidance as well as the environment.

Purpose

Oils are defined as greasy, viscous substances from plant,

animal, mineral sources (petroleum), and synthetics that are not soluble in water, and are usually flammable. These oils which have been used could be contaminated by physical or chemical impurities such as dirt, metal scrapings, and water. Oils that enter storm drains or waterways are a serious environmental hazard. used oil can pollute fresh water. The purpose of this procedure is to describe the proper means for handling and disposing of used oil from equipment maintenance operations, process procedures, and any other activities where used oils are generated.

Safe handling of fuel spillage

Objectives: At the end of this lesson you shall be able to

- state the safe handling of fuel spillage
 - state the effect of fuel spillage in workplace.
-

Diesel fuel is a flammable liquid and fuel spillage or leaks in work place may be cause for slippage or fire hazard.

Safe handling of fuel:

- 1 Improper handling of fuel may cause for fuel spillage and explosion, so fuel handling should be use appropriate method.
- 2 Fuel should not be stored near the working hot engine.

- 3 Don't refueling, when it is hot, fuel tank vapor may cause for fire.
- 4 No smoking is allowed when refueling to the engine.
- 5 Don't spill the fuel during refilling the fuel tank or fuel container.
- 6 Use funnel during filling the fuel in fuel tank to avoid fule spillage.

- 7 Use tray during air bleeding from the fuel system to avoid fuel spillage.
- 8 Fuel leaks and spills near the engine may cause for accident so it should be clean and mopped up quickly as soon as the spillage.
- 9 Stationary engine fuel tank should be position away from any source of direct heat to the fuel tank.

Safe handling and periodic testing of lifting equipments

Objective: At the end of this lesson you shall be able to

- state the periodic testing of lifting equipments.

Safe and successful lifting operations depends on periodical testing of lifting equipment, maintenance and handling of operation, failure of this equipment may result in significant loss and fatal accident.

Lifts and cranes

Safety precautions for handling of lifts and cranes.

- Never exceed the safe working load (SWL) of the equipment you are using.
- Always support vehicles with axle stands before working underneath them.
- There is always a danger when loads are lifted or suspended. Never work under an unsupported, Suspended or raised load such as a suspended engine.
- Always ensure that lifting equipment such as jacks, hoists, axle stands, slings, etc, are adequate and suitable for the job, In good condition and regularly maintained.
- Never improvise lifting tackle.

Periodic testing of lifting equipment

- Visually inspect the component of the lifting equipment such as lifting chain, slings chain hoist before operating the equipment.
- In Hydraulic function of lift (or) cranes check the oil level and top up the oil level periodically.
- The Hydraulic oil used in the lifts or cranes should be replaced periodically.
- The lifting equipment should be over hauled once (or) twice a year.
- Check the electrical connections of the lifting equipment periodically.
- The calibration of the lifting equipment should be done once in a year and calibration certificate must to obtained from the authorized testing center.

Authorization moving of road testing vehicles

Objectives: At the end of this lesson you shall be able to

- state the function of regional transport office
- state road safety
- Issue of fitness certificate and vehicle permits.

Ministry of road transport & highways

Regional transport office is responsible, for registration monitoring controlling authoring of any automobiles our country.

Responsibility of regional transport office

Issue of license

- Testing and insurance of learning license
- Issue of renewal of driving license
- Issue of international driving license
- Addition of a new class of vehicle to driving license
- Issue of renewal of license for the establishment of a motor driving school
- Issue of renewal of driving instruction license
- Issue of conductor's license

Revenue collection for the government

- Tax on motor vehicle
- Collection of IMV fees
- Departmental action cases
- Inspection of vehicles at check posts

Environmental upgradation

- CNG/LPG conversion
- PUC testing
- Road safety measures

Registration of vehicle

- Issue of renewal of registration certificate for motor vehicles
- Transfer of ownership in registration certificate of motor vehicle
- Entirely termination of hire-purchase /lease/ hypothecation in R.C to book
- Recording of changes in registration certificate
- Issue of certificate of temporary registration
- Issue of no objection certificate(NOC)
- Issue and renewal of trade certificate
- Issue of fitness certificate and vehicle permits.

Road safety precautions

The biggest responsibility lies on the driver while using the road. The vehicle being a fast moving object it can do

a lot of damage, if carelessly driven. In order to promote safety, the following general precautions should be observed by every road user.

Always keep to your left; while overtaking it should be done on the right side.

When passing stationary vehicles, keep a watch on pedestrians who may come out suddenly from the front of the stationary vehicle.

Drive slowly on narrow winding road.

When the traffic is held up, never try to force your way by encroaching on the off-side of the road.

Do not overtake on bends

Overtake only when a driver in front of you gives the signal to do so, and always overtake on the right side.

Always keep a good distance between your vehicle and the others. Too close a driving is dangerous.

Always park the vehicle at specified places.

Always give the signal when turning.

Drive slowly and carefully on a road where a school or hospital is situated.

Reversing the vehicle

In driving the vehicle backwards, reverse it into a limited opening either to the left or right under control and with reasonable accuracy. Reverse lights can be used at nights to indicate to the other road users who are coming at the back of the vehicle being reversed.

Problem with automotive emissions

The emissions given off by the burning of gasoline have shown to be toxic to people and animals when breathed. But they also contribute to the ugly haze called smog, which hangs around the atmosphere causing problems long after the car has moved on. Here are the major pollutants.

Hydrocarbon (HC), Carbon Monoxide (CO) Nitrogen Oxide (NO₂), Volatile organic compounds (VOCs) particulate matter (diesel vehicle), Sulphur Oxide (SO_x).

Energy conservation process

Objective: At the end of this lesson you shall be able to

- define energy conservation
 - classify energy conservation opportunities.
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Energy Conservation

To achieve and maintain optimum energy procurement and utilization, throughout the organization

To minimize energy costs/waste without affecting production, comfort and quality.

To reduce environmental pollution per unit of industrial output - as carbon dioxide, smoke, sulphur dioxide.

Definition of Energy Conservation

Energy conservation is achieved when growth of energy consumption is reduced, measured in physical terms.

Energy conservation can, therefore, be the result of several processes or developments, such as productivity increase or technological progress.

For example, replacing traditional light bulbs with Compact Fluorescent Lamps (CFL) (which use only 1/4th of the energy to same light output). Light Emitting Diode (LED) lamps are also used for the same purpose.

Energy Conservation Opportunities (ECOs)

Opportunities to conserve energy are broadly classified into three categories:

i) Minor ECOs

These are simple, easy to implement, and require less investment implementation time. These may correspond to stopping of leakage points, avoiding careless waste, lapses in housekeeping and maintenance etc.

ii) Medium ECOs

These are more complex, and required additional investment and moderate implementation time. For example, replacement of existing household appliances by new energy efficient ones.

iii) Major ECOs

These provide significant energy saving. They are complex and demand major investment and long implementation periods. For example, replacement or major renovation of old buildings, machineries etc.

Electrical safety tips

Many injuries occur as the result of contact with electrical equipment or appliances. If the part of the body comes in contact with the electrical circuit, a shock will occur. The current will enter the body at one point and leave at another and this passage of electricity can cause severe pain, burning of skin at the point of contact, and even death. So it is need safe and free from electrical hazards.

Safety tips

- 1 Use only properly grounded or double insulated items/equipments.
- 2 Do not overload outlets.
- 3 Do not plug multi-outlet bars to other multioutlet bars.
- 4 Only use equipment that has been approved by national testing laboratory.
- 5 Minimize the use of extension cards.
- 6 Do not cover power cords with rugs or mats.
- 7 Do not run electrical cord through pedestrian aisles.
- 8 Disconnect the power before servicing the equipment.
- 9 Donot ignore warning signs.
- 10 Replace the defective cords immediately.
- 11 Cover or guard any exposed electrical components or wire.
- 12 Don't use electrical equipment when your hands or equipments are we and don't use it near wet surface/water.
- 13 Don't pull cord from a distance.