

## **FIRE SAFE GOA**



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Fire continues to be the most costly of all public safety problems today, as it has been for the past several decades. The losses in human lives and injuries due to fires and explosions continue to occur. Fire caused property losses are far in excess of those caused by all classes of crime.

Today is April 14<sup>th</sup>. The day is commemorated as National Fire Service Day to pay tribute to the Martyrs who had laid down their lives in the line of duty. “**We Serve to Save**” is the motto of Fire and Emergency Services in the Country and the department has lived up to this motto, giving our topmost priority to saving lives and property.

Every year, the Government of India adopts a theme for the National Fire Service Day with a view to stress on various aspects of Fire Safety as well as other related safety aspects. This year the theme adopted is:

**To prevent Fire:**

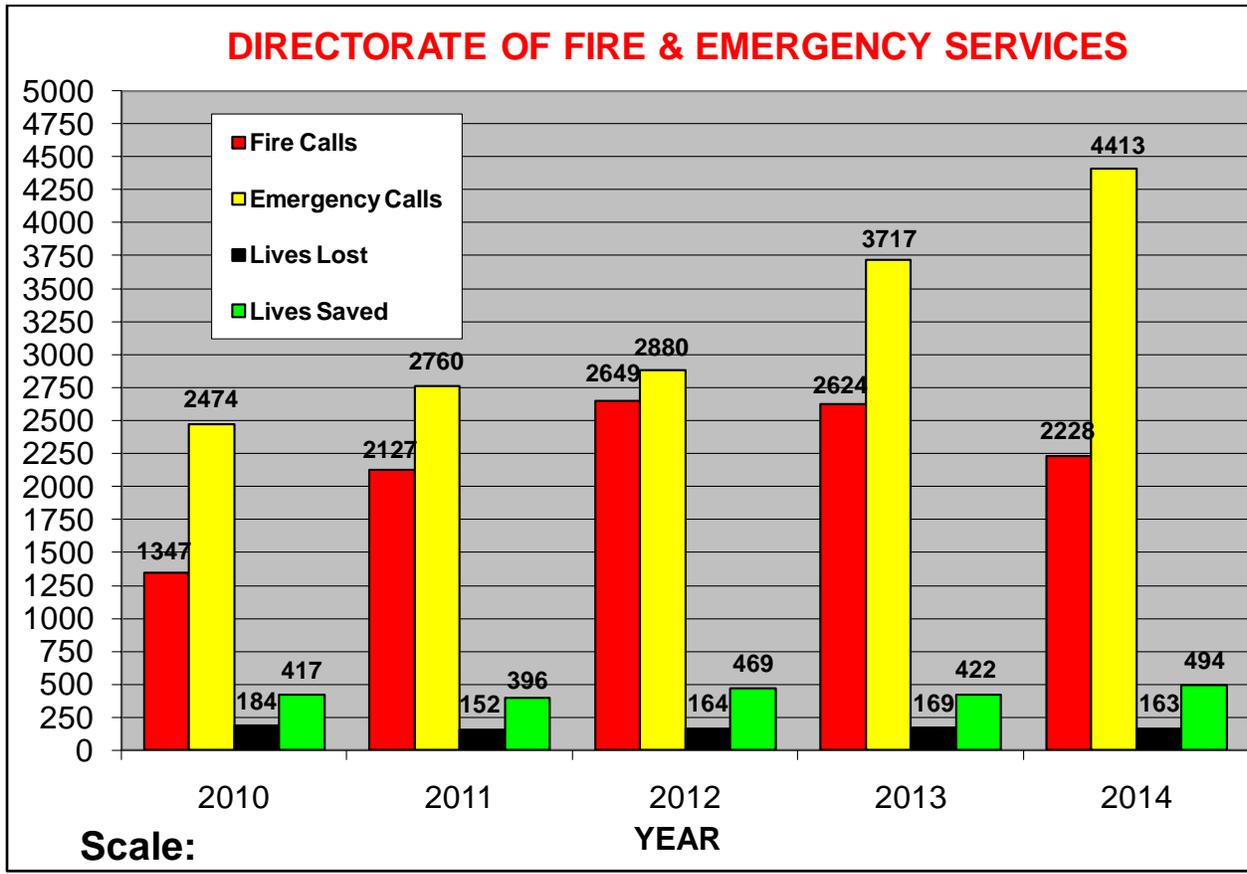
**“Adopt Safe Housekeeping Practices & Approved Electrical Appliances”**

आग से बचाव के लिए :

“ सुरक्षित जीवन शैली एवं प्रमाणित विद्युत उपकरण अपनाएँ ”

The State of Goa has witnessed many Fire and Non-Fire Emergencies, however the Statistics for the last 5 years has shown a rapid rise in fire related to wild undergrowth, Automobile Fires and Electrical Fire.

The Statistical Chart for the past 5 years is given below:-



**WILD UNDERGROWTH FIRES.**

Wild undergrowth fires consume grass, weeds and timber but will also involve structures and even vehicles and equipment as subsidiary fuels. Although the wild fire basic fuels are all cellulosic in nature, they can vary considerably in their fire behaviour because of their volume, density, arrangement and moisture contents. Short dry grasses, for instance, tend to flash over once, contributing little to the fire (except to carry it into denser fuels), while short green grasses may not burn at all during their first exposure to the fire but will dry out, ready to provide fuel for a reburn of the same area. Long dry grasses may be burned off at their tops if the fire is passing quickly across dense growth. The remaining grass stems then provide fuel for a second or “following” burn. This behaviour is most often seen in areas where the fire is across hill slopes and valleys.

Wild fires emanating from the undergrowth has been observed in Goa as the main cause of loss of property in Plantation like Timber, Cashew Plantation, Mango Plantations etc. The Owners of the properties need to take care that before the dry season the brushes and bushes are cleared. The standard practice of leaving sufficient gaps to prevent the spread of ground land fire.

The common causes of wild fire are known to all however it would be advisable to take cognisance of these so that appropriate response can occur:

#### CAUSES

- Unextinguished fires left by people camping in forest areas and others.
- Carelessness with smoking materials
- Controlled grass and weed burning
- Sparks from vehicles

#### REMEDIAL ACTION

- Ensure before leaving the site that fire and any burning coal/ charcoal/ firewood/twigs are put out using water, and preferably buried inside soil, to prevent re-kindling.
- Those who smoke while in grassy areas should ensure that the smoking materials are completely extinguished before leaving the area. Careless throwing of material is known to have caused massive fires.
- This ancient practice followed before the Monsoon is causing more damage to the Hill sides than they give benefit from free manure. Better to avoid this practice.
- Respond quickly to any such unexpected fires and do not leave the area until after the fire is put out.

- Lightning, a major cause
  - Lightnings cannot be prevented in the forest areas. However, quick action by responsible people can control the spread of Lightning induced fires.
- Power transmission lines and equipment
  - High Tension Transmission Lines usually cross Forest Areas. Care needs to be taken to ensure that chances for accidental fire are eliminated or minimised.
- Arsonists
  - Areas vulnerable to Arson need to be under constant watch to enable quick response in case of need.
- Rekindling of smoldering embers from previous controlled fires.
  - The complete dousing of all fires must be ensured before leaving an area where a fire was lit for whatever purpose.
- Sleepers, which are old trees or stumps containing much rotted wood internally in which a smoldering fire has been previously induced.
  - Such vulnerable trees and stumps should be cut down and put away from areas vulnerable to Fire.

Wild Fires have always been with man. Perhaps it is also the most familiar fire which man learned to extinguish, alone or in groups. Keeping the habit of holding Fire Fighting Rehearsals in Forest areas will go long way in keeping us ready for any eventuality. There is an urgent need for the farmers to realise that setting fires to farm land grass and neglecting the fires is very dangerous. There is criminal liability in such cases, because it endangers others property and lives.

## **AUTOMOBILE FIRES**

All types of motor vehicles – cars, trucks, buses and the like are subject to fires of either accidental or incendiary origin. They all contain substantial quantities of ignitable liquids for fuels, electrical and mechanical systems to provide ignition sources, and combustible plastic and metal components and cargo to provide fuel loads.

Extensive fire fighting experience reveals that contrary to expectations, fuel tanks very rarely explode during a vehicle fire. This is because its vapours are much heavier than air and tend to fill the tank completely to the top. Further, some vehicles are being fitted with LPG (liquefied petroleum gas) or CNG (compressed natural gas) fuel systems, and a number of fires have been caused by even small leaks or poor filling practices that resulted in explosive vapour mixtures in or around the vehicle.

Gasoline is the most abundant fuel in most automobiles and the one with the lowest flash point and is therefore often thought to be the first fuel ignited. Leaks of burning combustion gases around loose spark plugs or faulty manifold gaskets offer a chance of flame ignition.

## **ELECTRICAL SYSTEMS**

Electrical causes of vehicle fires cannot be dismissed out of hand. Most power on vehicles is direct current, so arcing, once established will not self-extinguish, as often seen in alternating current events.

In short circuits of these or high current circuits of the horn, cooling fans, cigarette lighter, or lighting equipment, the temperatures developed will cause smoking or even flaming combustion of the insulation and any connectors or terminals.

One additional source of electrical fire hazard is the battery. In normal use, it presents no fire hazard, but when it is receiving a charging current, considerable volumes of explosive hydrogen gas are generated. An explosion will result from an arc (even between the cells of the battery) or other source of ignition and some fire may follow if the charging continues. Explosions unaccompanied by fire are the rule, and even these are rare. Symptoms of malfunction will usually be apparent to the operator. Extra batteries may be concealed in the vehicle to power hydraulic lift systems or high power sound systems in modified vehicles.

Electrical shorts developing in the maze of wiring and myriad components have a rich source of fuel available once temperatures are reached at which the plastics and resins begin to pyrolyze and ignite. A fire accelerated with flammable liquid would be expected to be visible as open flames almost immediately after ignition, especially if a door, window, hatchback, or sunroof was open. However, a fire ignited only by a direct flame in a closed car may not be visible from a distance for some minutes.

Accidental fires usually require considerably longer to start, develop into flaming combustion, and spread than do accelerated fires.

The Central Motor Vehicle Rules 1989 (Special provisions Rule 128) mandates Tourist Vehicles other than motor cabs under the section 13(iii) "Fittings and Accessories" requires "Fire Extinguisher, dry powder type located near the engine compartment" to be fitted. It would be desirable for other Vehicles also to carry at least one ABC Fire Extinguisher of IS:14609 and the product shall have BIS Standard Mark. Transport Authorities may like to amend the Rules to facilitate this provision. Ideally these should be made standard accessories to be sold alongwith the Vehicle.

## **ELECTRICAL CAUSES OF FIRE**

Almost any kind of energy can be responsible for igniting a flame. One form of energy—electricity— is both familiar to us because it is in use constantly around us. Electricity creates heat as it moves through materials, typically called **conductors**. Electric current pose ignition risks when, under normal operating conditions they are brought into contact with susceptible materials or are misused in such a way their normal heat production causes ignition.

The user usually is not aware of the heat buildup until it causes failure of the device or ignition of the device or nearby combustibles. There are also situations where the current does not flow through its intended path but instead flows through an unintended path, causing severe localised heating and ignition of the material.

## **PROTECTION AGAINST OVER CURRENT**

Over current protection devices (OCPDs) (fuses and circuit breakers) have two important functions. One is to guard against overheating of conductors from overcurrent. (This protection may be to protect the conductors of the building or to protect appliances and their power cords from overheating). The other is to provide protection from a short circuit sometimes called dead short.

Common form of over current protection is the circuit breaker. The circuit breaker in its simple form consists of a mechanical means of opening or switching the circuit. The modern circuit breakers is a dual function device with either thermal or electromagnetic triggers that allow it to respond to modest over current slowly or to massive over current (Short circuits) very quickly . External heating (from fire exposure) can cause circuit breakers to trip.

Circuit breakers are designed to respond in a time temperature – dependent manner. Fuses and circuit breakers, although meant for preventing overheating from overloading in an electric circuit, are arc-producing device and may be hazardous themselves unless designed, installed and maintained so that the arcs produced cannot ignite flammable atmosphere.

The following hazards most likely to be found in over current, protective devices:

- Fuses of significantly too large a capacity or circuit breakers
- Circuit breakers made inoperative by blocking
- Plug fuses that have blown and in which metal of the fuse holder or wire has been inserted.
- Refillable or rewirable fuses in which additional strips or wires have been placed.
- Fuses or circuit breakers in poor mechanical condition
- The **service conductors** from the utility transformer to the meter and panel have no over current protection.
- Fuses, without enclosures, in the vicinity of combustibles.
- Corrosion or contamination of fuses, circuit breakers, or their connectors of sockets.

Large transformers frequently are oil-filled to insulated them and to provide a cooling bath for the normally produced. Large power transformers of this type have a potential Fire hazard from the high voltages and presence of certain types of combustible oils. Fire problems with transformers are similar to those in motors; however, the mechanical and high starting current conditions of motors are applicable.

Electric appliances are found in nearly all structures, and whether they produce quantities of heat by design or by failure or simply represent a convenient source for that all-important arc, their possible contribution to fire causation should not be overlooked. Faults with power cords and plugs may result from poor design or misuse by the consumer. Because power cords and plugs are subject to misuse, faults in them probably represent the majority of fire causes from appliances.

Most fatalities in fires are not directly the result of the effects of the flames but rather of the asphyxiation caused by replacement of breathable air by toxic gases. In fact, about three times as many victims die from asphyxiation as from the thermal or physical impact of fire or exposition-caused injuries. Subsequent exposure to fire then causes destruction of the body. Deaths from fire are not always instantaneous; they may occur hour days, or weeks after the fire. For this reason, every fire that produces a serious injury to an occupant or emergency responder (serious enough to warrant hospitalisation) should be considered a potential fatal fire and should be treated accordingly.

Safety consciousness pays, both in short term and Long term. We need to avoid the temptation to buy spurious electrical products which may be cheaper. It pays to insist on quality Certified products.

It is suggested that to protect the interests of consumers in safety there is a need that only BIS Standard Mark products are purchased and as such 92 products have been brought under mandatory BIS Certification mark Scheme which are available on BIS Web site [www.bis.org.in](http://www.bis.org.in).

Neglecting safety could prove to be very costly.

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