

# **Indian Institute of Technology Gandhinagar**

## **Campus Safety**

### **Standard Operating Procedure on Lab and Fire Safety**

#### **Introduction**

With the increasing dependency on electrical gadgets and digital facilities, and chemical usage, it is imperative that all precautions are put in place for safe use of equipment hazardous materials and chemicals and safety of users. IITGN the premier institute of Nation is fully equipped with its modern labs, class rooms and other necessary facilities for use by students, staff and faculty. It also implies that complexity of all electric systems and chemicals must be carefully studied and used to avoid any accident. This document lay down certain aspects of handling of hazardous chemicals, fire prevention and fire fighting in case required.

#### **Fire Prevention**

IITGN campus in spread over in approx 400 acres of land, out of which constructed area in its present state is approx. 118 acres which includes Academic, Hostel and Housing blocks. The buildings are compact from functional view point at the same time area is sufficiently open to prevent fire from spreading.

Best way to prevent fire is to understand the probable causes of fire and take adequate precautions to prevent fire.

#### **Probable Causes of Fire**

- **Electrical**
  - Over loading of wires and at power sockets.
  - Mishandling of electrical equipment and machinery.
  - Loose connection in multi outlets plugs.
  - Electrical Heater.
  - Loose wiring.
  - Improper Insulation at junction points.
  - Improper connection with extension cords
- **Human Error**
  - Storage of waste and combustible material near probable source of fire.
  - Mishandling of Electrical appliances and machines.
  - Mishandling of flammable chemicals and solvents
  - Unattended Hot Plate.
  - Poor housekeeping.
  - Throwing away lighted cigarettes.
- **Lab Accidents**
  - Heating of oxidizing materials by gas flame or oil bath.
  - Use of water reactive material in presence of water.
  - Exposure to air of pyrophoric materials.
  - Storage of Incompatible chemicals.
  - Inadequate Ventilation while experimenting with gases.
  - Mixing of wrong chemical solutions while doing experiments in lab.
  - Storage of gas cylinder in confined space/poor ventilation.
  - Un-controlled heat produced by chemical reaction.

- Bunsen burners can pose fire hazards.
- Improper grounding of equipment and machinery.
- Ignorance of MSDS (Material safety data sheet), instructions on safety.
- **Natural Calamity:** Lightening etc.

## Preventive Measures

- **General**
  - Watch against any loose electric connections, short circuiting, sparks from fuse/sockets etc. and report immediately to concerned staff.
  - Ensure all lights are switched off & plugs are pulled out while leaving the room / lab by end of the day.
  - Unattended burning is strictly prohibited.
  - Wear lab coats, safety glasses and shoes before entering labs with chemicals and heavy machinery.
  - Wear gloves while handling chemicals and corrosive materials.
  - Read safety descriptions (MSDS) about the chemicals and solvents thoroughly before opening the containers.
  - Open and handle all chemicals only inside fume hoods.
  - Observe fire precautions in cafeteria, canteen & kitchen.
  - Maintain clean and clutter free campus.
  - Ensure regular inspection and testing of all electrical appliances and wiring.
  - Do not leave flame unattended.
  - Follow “no smoking” rules in applicable areas.
  - Ensure proper ventilation and illumination.
  - Be aware of all entry / exit doors to be fire resistant.
  - Follow all norms as laid down by local fire office.
  - Display important contact details / tele nos in each block at suitable location.
- Preventive measures for **Chemical lab:** Attached as **Appendix ‘A’**.
- Preventive measures for **Electrical lab:** Attached as **Appendix ‘B’**.
- Preventive measures for handling **heavy machines in Civil/ Mechanical / Electrical lab:** Attached as **Appendix ‘C’**.
- Preventive measures for **fire:** Attached as **Appendix ‘D’**.
- How to use **fire extinguisher:** Attached as **Appendix ‘E’**.
- **Important contact numbers:** Attached as **Appendix ‘F’**.

## Action to be Taken in Case of Outbreak of Fire

Famous saying “Man proposes and God disposes” cannot be ignored. If at all unfortunate accident takes place, IITGN community must be well prepared to stop the fire immediately. For this, each person must be aware of the actions to be taken as part of collective effort. Awareness capsules, training and regular practice will contribute immensely towards preventing / stopping fire outbreak.

## People

It is important to identify the response force expected to be involved in firefighting and need to be trained accordingly. These can be classified as under:

**First Responders** – Security and house- keeping staff along with the researcher who works in the lab regularly in near vicinity are expected to react first and need to be trained on actions to be taken and use of firefighting equipment.

**Actions by First Responders**–The expected sequence of action would be as under:

- Moment fire is noticed; draw attention of all persons around by shouting “FIRE, FIRE, FIRE”.
- Whistle to be blown by security staff on short spurts to draw attention of persons in near vicinity.
- By this time the fire alarm system (hotter etc) will get activated and location of fire will be indicated. It is possible that first indication of fire comes from alarm system before anybody comes to know.
- Security staff or persons from support team (in case security staff is not available at site at that moment) to immediately take out fire extinguisher from nearest location and try to extinguish fire.
- In case of electrical fire, immediately switch off the power from nearest mains and use CO2 extinguisher only and not to spray water.

**Support Team** – All staff and faculty are expected to support firefighting efforts.

Following actions are expected to be taken:

- Faculty/students/staff present near the area of fire must (MUST) maintain calm, evacuate persons/belongings etc in case stuck inside and ensure there is no stampede like situation.
- Call Gandhinagar fire station and call fire tender, if required.
- Switch off main switch of the affected room / block as applicable in case of electric fire.
- Evacuate persons who may need medical attention on priority.
- Help entry of firefighting staff and fire tender movement up to location of fire.
- Help in de-crowding the area and guide them to pre assigned area, if required.
- Inform police in case situation demand for crowd management.

## **Training**

Training is the most important part of firefighting operation. In case the responder is not trained to operate the firefighting equipment, he can't be named as responder. Training can be classified as under:

- (a) Training to handle the equipment (awareness Capsule)
- (b) Mock up drills to remain abreast with the training.
- (c) Handling of chemicals and lab safety.

**Awareness Capsule:** Capsule should be conducted at least once in four months so that all the security and housekeeping staff undergo this training at least once a year. Capsule should include following topics:

- (a) Likely cause of fire
- (b) Preventive measures
- (c) Training on equipment handling and its maintenance.

**Mock up drill:** Mock up exercise is important to check the efficacy of training imparted and sensitize the community and their participation as part of support team. Mock up drill should be done once in six months with dummy controlled fire preferably in open area.

**Lab Safety:** Lab safety training should be conducted once a year to make awareness among researchers about safe laboratory practices and handling of corrosive, toxic and pyrophoric chemicals.

## Appendix 'A'

# Indian Institute of Technology Gandhinagar

## CAMPUS SAFETY

### Safety with Chemicals



**Lab coat must be worn at all times**

Protect yourself from chemical spills



**Covered shoes must be worn at all times**

Protect your feet



**Long hair must be tied back**



**Know the hazards and get familiarize with the chemicals by referring Material safety Data Sheet before starting any experiment**



**Safety goggles must be worn when handling hazardous material**

Protect your eyes



**Gloves must be used when handling hazardous material**

Protect your hands



**Clean up before leaving the lab**



**Eating and drinking is strictly prohibited**



**No Entry  
Without Proper PPE**



**No Mouth Pipetting**

Appendix 'B'  
**Indian Institute of Technology Gandhinagar**  
CAMPUS SAFETY  
**Safety with Electricity**



Covered shoes must be worn all times  
Protect your feet



Approved rubber gloves must be put on while  
working on high voltages  
Protect from fatal electrical shocks



Long hair must be tied back



Power boards with over load protection and  
residual current devices (RCD's) must be used for  
all hand held electrical appliances/ equipments



Switch off electrical appliances / equipments which  
are not required



Keep fire escape route clear all the times, know the  
nearest fire extinguisher/ fire blanket/ first aid box  
and its uses



Clean up before leaving the lab



**No Entry**  
**Without Proper PPE**

## Appendix 'C'

# Indian Institute of Technology Gandhinagar CAMPUS SAFETY

## Safety with Machines



**Always wear protective gear**  
Lab coat, safety shoes, safety glasses



**Long hair must be tied back**  
**Avoid loose clothing**



**Be aware of 'nip points'**  
Lose hair/clothes may get caught



**Be aware of moving machine parts**

- Rotating/tangentially moving parts
- Reciprocating/sliding moving parts

**Never operate a machine if you do not know about it.**



**During operation**

**Never handle metal shavings by hand**



**Keep fire escape route clear all the times**

**Know the nearest fire extinguisher/ fire blanket/ first aid box and its uses**



## No Entry without Proper PPE

Appendix 'D'  
**Indian Institute of Technology Gandhinagar**  
CAMPUS SAFETY  
**In case of Fire**



**KEEP CALM**



**RESCUE**

Rescue yourself and others who are in obvious danger



**ALERT**

Shout "Fire Fire"



**ALARM**

Dial 101& Campus Security (7567935473)

Tell them the exact location and type of fire



**PUT OUT**

Use the nearest fire extinguisher, if you know how to use it without putting yourself at risk. "Know which extinguisher to use!"



**EVACUATE**

Use the closest exit. If you encounter smoke, find another way out of the area. Crawl on ground and cover your mouth and nose.



Use first aid and call for medical help as required.

To call ambulance: 108

To call IIT Medical Center: 9276836488



Report the incident to lab-in-charge and Safety Centre ([csc@iitgn.ac.in](mailto:csc@iitgn.ac.in))

STOP

DROP

ROLL

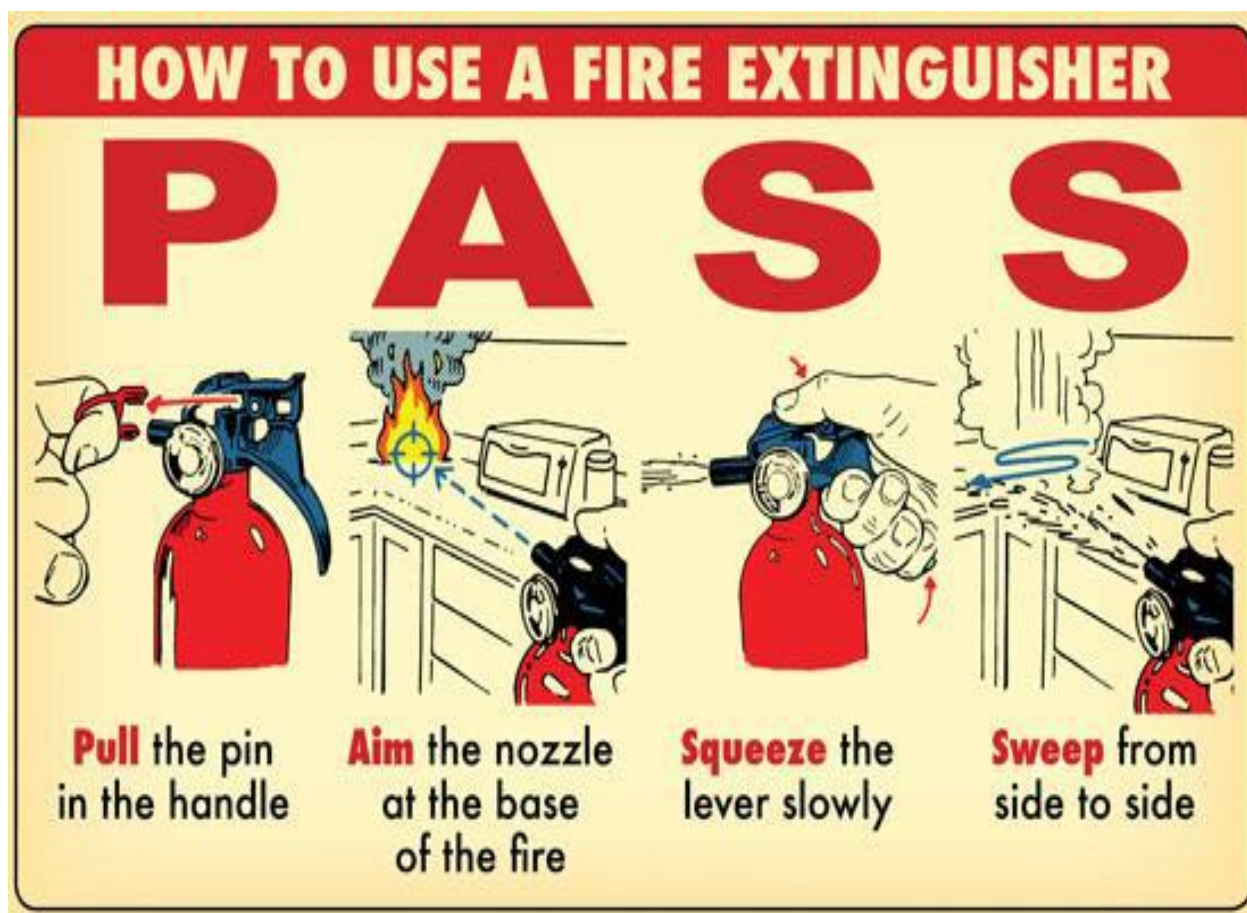


**Never run** when the clothes are on fire, as this will fan the fire. **Roll** on the ground.



## Appendix 'E'

# INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR CAMPUS SAFETY



## IMPORTANT





Check regularly your fire extinguishers

If indicator needle is on '**GREEN**' mark- It is OK

If indicator needle is on '**RED**' mark- Get fire extinguisher  
re-filled/ replaced



Appendix 'F'  
**Indian Institute of Technology Gandhinagar**  
CAMPUS SAFETY  
**Important Phone Numbers**

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Fire</b></p> <ul style="list-style-type: none"> <li>• Dial - 101</li> <li>• Fire and emergency Services-Gandhinagar</li> <li>• Phone No. (079) 23222100, 23222742</li> <li>• Campus Security (7567935473)</li> <li>• Safety Supervisor (9879560096)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|    | <p><b>Police</b></p> <ul style="list-style-type: none"> <li>• Dial - 100</li> <li>• Police Control Room, Gandhinagar: (079) 23210914, 23210108</li> <li>• Chiloda Police Station: (079) 23273600, 23273737</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|   | <p><b>Ambulance</b></p> <ul style="list-style-type: none"> <li>• Dial - 108</li> <li>• Junior Citizen Council, Gandhinagar: <ul style="list-style-type: none"> <li>○ (079) 23242023, 23240182; +91 94268 33344</li> </ul> </li> <li>• General Hospital (Civil), Gandhinagar : (079) 23221931 / 32 / 33</li> <li>• To call IIT Medical Center: 09276836488</li> </ul>                                                                                                                                                                                                                                                                                                                                                              |
|  | <p><b>Snake issues</b></p> <ul style="list-style-type: none"> <li>• Snake Lovers Club, Ahmedabad <ul style="list-style-type: none"> <li>○ 9909918569, 9998077701, 9033440304</li> <li>○ Mr. Pankaj (Village Palaj): 9099325553</li> </ul> </li> <li>• Sundarvan Snake Park, Ahmedabad: (079) 2692 1838/2692 3148</li> <li>• Snake catchers <ul style="list-style-type: none"> <li>○ Madan Singh : 94279 52623</li> <li>○ Jagrubhai : 94270 10188</li> <li>○ Sandip : 99255 99039</li> <li>○ Amit : 98982 08238</li> <li>○ Arvind : 98988 28609</li> <li>○ Dhaval : 94082 03447</li> <li>○ Kamlesh : 99247 48209</li> <li>○ Kaushal bhai : 9998077701</li> <li>○ Alternate persons: 76000 09845/97250 03122</li> </ul> </li> </ul> |