

# ECO-CLUB MANUAL

(FOR ECO-CLUB INCHARGES)

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स्वाध्यायान्मा प्रमदः

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## CHAPTER

# 7

## DISASTER MANAGEMENT

India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been a recurrent phenomena. Apart from natural calamities, accidental disasters have been frequent for one or the other reasons. Terrorist attack with bomb explosion in different parts of country, stampede in schools, religious places and other crowded areas are hard evidence of the fact that our country needs a better disaster management approach. If we could remember a few of them are:



- **Dec. 4, 1981**— Forty-five people, most of them schoolchildren, were killed when panicked sightseers stampeded down the narrow staircase of the Qutb Minar, in New Delhi.
- **Sept. 10, 2009** five girls were killed and 27 other students injured, five of them critically, in a stampede triggered by rumours of a short circuit in the Government Senior Secondary School in Khajuri Khas at around 9 am following the rumours.

People's attitude in our country towards this issue is '*I was not involved in this disaster, I am safe, and thus I can worry when it will affect me*'. This callous attitude is not going to solve the problem. Disaster management occupies an important place in this country's policy framework as it is the poor and the under-privileged who are worst affected on account of calamities/disasters. Not just our city but the entire country lacks the proper disaster management skills or approach. When an earthquake comes,

people just rush out of their buildings without stopping to think that they might cause stampede which may take more lives than the actual disaster.

## Objectives of the chapter

- To have a basic understanding of various concepts used in Disaster Management, like Disaster, Hazard, Vulnerability and Disaster Management Cycle.
- To explain various types of disasters.
- To have a better understanding of natural hazards, disasters and their management.

## INTRODUCTION TO DISASTER MANAGEMENT

Over the past decade, the number of natural and manmade disasters has climbed inexorably. Drought and famine have proved to be the deadliest disasters globally, followed by flood, technological disaster, earthquake, windstorm, extreme temperature and others. In India, 59 per cent of the land mass is susceptible to seismic hazard; 5 per cent of the total geographical area is prone to floods; 8 per cent of the total landmass is prone to cyclones; 70 per cent of the total cultivable area is vulnerable to drought. Apart from this the hilly regions are vulnerable to avalanches/ landslides/hailstorms/cloudbursts. Apart from the natural hazards, we need to know about the other manmade hazards which are frequent and cause huge damage to life and property. It is therefore important that we are aware of how to cope with their effects. We have seen the huge loss to life, property and infrastructure a disaster can cause but let us understand what is a disaster, what are the factors that lead to it and its impact.

### What is a Disaster ?

The term disaster owes its origin to the French word “**Desastre**” which is a combination of two words ‘**des**’ meaning bad and ‘**aster**’ meaning star. Thus the term refers to ‘**Bad or Evil star**’. A disaster can be defined as “*A serious disruption in the functioning of the community or a society causing wide spread material, economic, social or environmental losses which exceed the ability of the affected society to cope using its own resources*”. A disaster is a result from the combination of hazard, vulnerability and insufficient capacity or measures to reduce the potential chances of risk. A disaster happens when a hazard impacts on the vulnerable population and causes damage, casualties and disruption. Any hazard – flood, earthquake or cyclone which is a triggering event along with greater vulnerability (inadequate access to resources, sick and old people, lack of awareness etc) would lead to disaster causing greater loss to life and property. For example; an earthquake in an uninhabited desert cannot be considered a disaster, no matter how strong the intensities produced. It is disastrous only when it affects people, their properties and activities. Thus, disaster occurs only when hazards and vulnerability meet. But it is also to be noted that with greater capacity of individual/community and environment to face these disasters, the impact of a hazard reduces. Therefore, we need to understand the three major components namely **hazard, vulnerability and capacity** with suitable examples to have a basic understanding of disaster management.

### What is a Hazard & How is it classified?

Hazard may be defined as “a dangerous condition or event, that threat or have the potential for causing injury to life or damage to property or the environment.” The word ‘hazard’ owes its origin to the word ‘**hasard**’ in old French and ‘**az-zahr**’ in Arabic meaning ‘chance’ or ‘luck’. Hazards can be grouped into two broad categories namely natural and manmade.

1. **Natural hazards** are hazards which are caused because of natural phenomena (hazards with meteorological, geological or even biological origin). Examples of natural hazards are cyclones, tsunamis, earthquake and volcanic eruption which are exclusively of natural origin. Landslides, floods, drought, fires are socio-natural hazards since their causes are both natural and man made. For example flooding may be caused because of heavy rains, landslide or blocking of drains with human waste.
2. **Manmade hazards** are hazards which are due to human negligence. Manmade hazards are associated with industries or energy generation facilities and include explosions, leakage of toxic waste, pollution, dam failure, wars or civil strife etc.

## What is vulnerability ?

Vulnerability may be defined as “The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard, on account of their nature, construction and proximity to hazardous terrains or a disaster prone area.” In simple terms is the potential for loss to an individual, community or place because of a disaster, which is affected by geographical as well as social conditions. People living in an area may be vulnerable to more than one disaster. For instance, a coastal area may face floods and cyclones frequently, while being located in an earthquake zone. Such an area is called a ‘multi-hazard’ zone. Our country is divided into various zones based upon the vulnerability of the area to various disasters. When these zones overlap, we have a multi-hazard zone.

## What is Disaster Management Cycle?

Disaster Risk Management includes sum total of all activities, programmes and measures which can be taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover from its losses. The three key stages of activities that are taken up within disaster risk management are:

### Before a disaster (pre-disaster):

Activities taken to reduce human and property losses caused by a potential hazard. For example carrying out awareness campaigns, strengthening the existing weak structures, preparation of the disaster management plans at household and community level etc. Such risk reduction measures taken under this stage are termed as mitigation and preparedness activities.

### During a disaster (disaster occurrence):

Initiatives taken to ensure that the needs and provisions of victims are met and suffering is minimized. Activities taken under this stage are called emergency response activities.

### After a disaster (post-disaster):

Initiatives taken in response to a disaster with a purpose to achieve early recovery and rehabilitation of affected communities, immediately after a disaster strikes. These are called as response and recovery activities. Disaster Risk Reduction can take place in the following ways:

#### 1. Preparedness

This protective process embraces measures which enable governments, communities and individuals to respond rapidly to disaster situations to cope with them effectively. Preparedness includes the formulation of viable emergency plans, the development of warning systems, the maintenance of inventories and the training of personnel. It may also embrace search and rescue measures as

well as evacuation plans for areas that may be at risk from a recurring disaster.

Preparedness therefore encompasses those measures taken before a disaster event which are aimed at minimising loss of life, disruption of critical services, and damage when the disaster occurs.

## 2. Mitigation

Mitigation embraces measures taken to reduce both the effect of the hazard and the vulnerable conditions to it in order to reduce the scale of a future disaster. Therefore mitigation activities can be focused on the hazard itself or the elements exposed to the threat. Examples of mitigation measures which are hazard specific include water management in drought prone areas, relocating people away from the hazard prone areas and by strengthening structures to reduce damage when a hazard occurs. In addition to these physical measures, mitigation should also aim at reducing the economic and social vulnerabilities of potential disasters

## Conclusion

‘Prevention is better than cure’, educating the people about small things like how to evacuate, where are the safety exits, where to assemble during disasters is certainly much better than having the paramedics search the disaster affected area for dead bodies. What needs to be understood here is that a little education and awareness goes as far as saving a life or two. There is already a legislation which takes care of institutionalization of disaster management (Disaster Management Act, 2005).

There are various ways to achieve a great improvement in the way we look at ‘disasters’, some of them are:

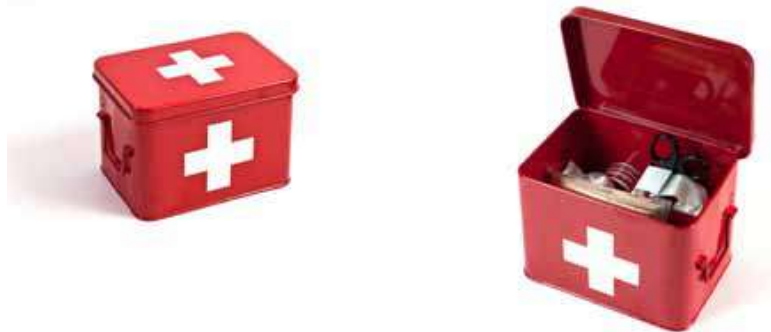
1. Making it compulsory for every institution or building to have an evacuation plan. Conducting mock drills at least once a month.
2. Disaster Management courses in schools should be more practical in nature and not theoretical. Making students ‘learn’ what to do during disasters for examination purposes is not going to help them when an actual disaster strikes.
3. Local authorities should mark disaster sensitive areas and alert the locals to take all the necessary steps to prevent getting affected.
4. Since technology and internet have become a great tool for self education these days, the websites for NDA needs to be improved to make them more interactive and educative.
5. India as a nation needs to inculcate a culture where disaster management becomes a habit. Our approach regarding putting off such things for future or until they affect us directly can someday cost loss of many lives. Being prepared and cautious is any day better than being full of regret.

## FIRST AID

### INTRODUCTION

First aid is the immediate treatment given to the victim of an accident or sudden illness before medical help is obtained. First aid has been practiced ever since the beginning of humanity. Learning first aid is the responsibility of every citizen.

*Mahatma Gandhi* was a great supporter of the cause of First Aid, and led a band of dedicated volunteers in 1906 during the time of the Zulu Rebellion and earlier in 1899 during the Boer war.



## OBJECTIVE

First aid is an important skill. It is important for every person to know the simple methods of first aid for some of the common ailments. By following some of the guidelines one can save life of many people by giving these initial remedies until the professional medical aid arrives.

In an emergency there's no time to read manuals or instructions. If one has memorised some of the immediate medical help, it will help in emergencies by reacting quickly and efficiently.

## Learning objectives

After reading this module we will be able to:

1. Provide pre-medical help to the victims of an accident or sudden illness
  2. Make our own first aid box and maintain it
  3. Develop basic skills to provide immediate help in emergent medical situations
1. **BLEEDING:** While playing, you or your friend must have fallen down and got hurt and bleeding may have occurred from the injured area. You may have panicked because the bleeding was not stopping. The immediate medical help that you can give to stop bleeding is as follows:
    - ◆ Raise the injured part (this will reduce the flow of blood from the injured part). If required, lay the victim down and raise the injured part.
    - ◆ Stop the bleeding by applying pressure with a clean cloth (preferably an absorbent cloth). If the cloth is not there then the pressure can be applied with your fingers to stop the bleeding.
    - ◆ If the blood soaks through the cloth, then apply a second bandage. Do not remove the first cloth as it will disturb the clotting which has already taken place.
    - ◆ Once the bleeding has stopped, clean the wound gently with soap and water to remove the dirt and apply a mild antiseptic.



**APPLY FIRM PRESSURE TO THE WOUND UNTIL THE BLEEDING STOPS**

<http://www.wikihow.com/Stop-Bleeding>



2. **NOSE BLEEDING:** During the hot summer months, due to the intense heat sometimes you or your friend's nose may have suddenly started bleeding. The first and foremost thing for you is to remain calm. If it is your friend, ask her/ him to remain calm and then follow the self-care home treatment given below.

- ◆ Sit down and lean forward
- ◆ Using your thumb & index finger, squeeze soft part of nose
- ◆ This part is between end of nose and the bridge of nose
- ◆ Continue holding till bleeding stops. Do not stop in-between
- ◆ If bleeding continues, hold for another 10 minutes
- ◆ Divert the attention of the patient
- ◆ Avoid picking, blowing or rubbing nose for 2 days
- ◆ Place an ice pack on the bridge of nose

3. **CUTS AND GRAZES:** It is very common and each one of us must have got cuts at some stage in our life either while playing or while working in the kitchen or while sharpening a pencil with a knife or a blade. Here are some simple tips for you to follow under these circumstances.

- ◆ Clean the cut area using a cotton swab or gauze.
- ◆ Apply a mild antiseptic.
- ◆ Tetanus injection may be required if the cut is caused by a rusty or dirty object.
- ◆ For small cuts, cover it by band aid (surgical tape).



4. **BRUISES:** Bruises are caused when a fall or a blow causes bleeding in the tissues beneath the skin.

**Caution:** Don't fight with blows with your friends

- ◆ Place a plastic bag containing some ice on the bruise for 20-30minutes. You can put crystals of ice in a zigloc bag and seal it to make a ice pack. The cold reduces the flow of blood to the bruised area, thus limiting the bleeding into the skin. It also reduces the size of the bruise.



5. **BURNS:** Be careful while doing an experiment in the lab or while working in the kitchen on a gas stove/ gas burner. On Diwali festival be extra careful while burning crackers. Always have some elderly person with you while burning crackers on Diwali.
- ◆ In case of minor burns (first degree burns- damages only the outer layer of the skin), cool the burn by dipping the burnt area in cold water or holding it under cold water for 10-15 minutes.
  - ◆ Gently dry and cover the burnt area loosely with a clean, dry gauze to prevent infection.
  - ◆ In case of second degree burns, remove all clothing, jewellery etc. from the burnt area unless it is sticking to the skin. Pour cold water over the affected area for 10-15 minutes. Gently blot the area dry (do not rub as rubbing may break the blisters thus subjecting it to infection). Lightly cover the entire area with a clean dry dressing. Raise the burnt area (arm or leg) to reduce swelling and immediately consult a doctor.
  - ◆ In case of third degree burns, immediately rush the patient to a doctor. Do not wash with cold water or apply medication to the burn. Just place clean, dry cloths over the burnt area.
  - ◆ In case of burn with acid, use large quantity of water to wash off the acid and then wash with an alkali and treat as for ordinary burn.
  - ◆ In case of burn with strong alkali, wash with water and apply vinegar or boric acid solution. Apply a burn ointment.
  - ◆ If the patient has burn on the face, keep checking to make sure the patient is not suffering from breathing problem.
  - ◆ Never put butter or greasy ointment on a burn. They seal heat into the wound and may cause infection. Also never use ice directly on the burn. Putting ice directly on the burn can cause frost bite further damaging the skin.
6. **FOREIGN BODY IN THE EYE OR EAR:** It is quite common and everyone of us must have faced some dust particles getting into our eyes. What should we do then? Here are some easy home care remedies for you:
- ◆ Never rub the eye.
  - ◆ Wash the eye with clean water.
  - ◆ In case of chemicals that have splashed into the eye, quickly wash out the chemicals by holding the victims face under the running water for at least 10-15minutes. Care should be taken that the chemical is not washed over the uninjured eye (tilt the head with the injured side downward).
  - ◆ Cover the eye with a clean pad and consult a doctor.
7. **FRACTURES AND DISLOCATIONS:** If you feel there is a dislocation or fracture, then:
- ◆ Make the patient comfortable. Move the patient as little as possible (movement may displace the broken bones).
  - ◆ Give support to the injured part. For example: the fractured arm should be supported against the body with a sling or bandage.
  - ◆ For the dislocation, do not try to force back a dislocated joint by yourself. Apply a splint to the joint to keep it from moving. Try to keep the joint elevated to slow the blood flow to the area and immediately consult a doctor.
8. **INSECT BITES AND STINGS:** A honey bee or wasp enters your classroom and stings you, then don't panic, just follow these home care remedies.
- ◆ Insects, spiders and scorpions are capable of causing very painful reactions. They can be dangerous but are rarely fatal. Sometimes they may cause allergic reaction. Remove the sting by scraping it using tweezers or a straight edged object.

- ◆ Wash the area with soap and water.
- ◆ Apply cotton or gauze soaked in ammonia solution or washing soda.
- ◆ Apply ice to reduce pain and swelling.
- ◆ Take the patient to a doctor.

**9. ANIMAL BITE (PETS /WILD ANIMALS):**

- ◆ Wash the wound with soap and running water.
- ◆ Apply an antiseptic ointment and rush to a doctor for medical aid. Tetanus booster may be required.

**CAUTION:** Don't go too near a stray dog. Don't disturb a pet when the pet is having food.

**10. SNAKE BITE:** First identify whether the bite is of a poisonous snake or a non- poisonous snake. In case the bite is of a poisonous snake then give the following immediate medical help:

- ◆ Tie a piece of cloth above the wound to check the blood circulation and spread of venom into the body.
- ◆ Cut open the wound made by the snake's teeth with a sharp knife or razor blade.
- ◆ Suck the blood out with a tube or mouth and immobilize the affected area with splints.
- ◆ Immediately take the victim to a doctor for medical treatment (you should do this only with required precautions).

**11. Food POISONING:** Food poisoning can be caused if you eat open food from road side food stall or you eat cut fruits from the road side vendor or drink juice from an unhygienic juice stall.

- ◆ In case of food poisoning induce vomiting by giving a large quantity of a solution of common salt, or a solution of soda or by putting fingers in the throat. If the patient's head is kept in the downward direction, then it will help in vomiting.
- ◆ Take the victim to the nearest hospital.

**12. ARTIFICIAL RESPIRATION:**

- ◆ Artificial respiration is a life-saving method used to restore breathing to a person whose breathing has stopped.
- ◆ Tilt the head back and lift up the chin.
- ◆ Pinch the nostrils shut with two fingers to prevent leakage of air.
- ◆ Take a deep breath out and put your mouth over the victim's mouth and breathe slowly into the patient's mouth. Repeat this twice.
- ◆ Check if the chest rises as you breathe into the patient. If it does, then enough air is being blown in.
- ◆ If there is no response, hold the head back further and lift the chin and repeat the procedure until the person starts breathing.
- ◆ Take the person to the nearest doctor.



**Take a deep breath and put your mouth over the victim's mouth and breathe out slowly into patient's mouth. Repeat this process.**

### 13. HEART ATTACK:

- ◆ Immediately lay the person in a horizontal position and encourage the victim to relax. Prevent any unnecessary stress and avoid movement.
- ◆ Allow plenty of fresh air to come.
- ◆ Loosen the person's clothing.
- ◆ In case the person's physician has advised any medicine for heart attack, then immediately give the medicine and call for the doctor.
- ◆ Meanwhile follow the advice given by the doctor over the phone.

### 14. UNCONSCIOUSNESS: A person may become unconscious because of intense heat, epilepsy or if the person is empty stomach for a long time. Here are some immediate remedies that you can give to the patient:

- ◆ Prevent overcrowding around the victim to ensure fresh air.
- ◆ Lay down the victim with head lowered and legs elevated.
- ◆ Loosen any tight clothing.
- ◆ Apply cool, damp cloth to the face and neck and allow fresh air to come.
- ◆ Keep the patient lying down for at least ten minutes after recovery
- ◆ Do not give anything to drink unless fully revived.

### 15. ELECTRIC SHOCK:

- ◆ Electric shock can cause unconsciousness, or stop breathing. First aid cannot be given unless the victim is separated from the electric current.
- ◆ Immediately turn off the electricity.
- ◆ In case you are not able to turn off the electricity, stand on the dry insulating material such as rubber mat, or a thick pile of newspaper. With a wooden stick or a wooden chair, push the victim's body away from the electrical appliance. **Never touch the victim.**
- ◆ If the person becomes unconscious or stops breathing then follow the instructions given before.
- ◆ Call for a doctor/ rush the victim to a nearby hospital.

### 16. DROWNING:

- ◆ Make the victim lie down with head lower than the chest/rest of the body to reduce the risk of inhaling vomit.
- ◆ The person should be kept warm by rubbing on the palm.
- ◆ Turn the victim upside down and press his/ her back so that he vomits out water from the lungs.
- ◆ Give artificial respiration till the victim starts breathing on his or her own again or till medical advice arrives.
- ◆ If the victim starts coughing or spurring again from mouth and nose, then turn the victim on their side. This will remove the water from the lungs.
- ◆ Once the victim starts breathing naturally, keep him or her warm and call for the doctor/ take the victim to a nearby hospital.

**CAUTION:** Never enter a swimming pool alone. Always go with a trainer or with someone who knows swimming.

## First aid box

The eco-club teacher should keep a first-aid box in her/ his cupboard. She should also train all the eco club members how to use the various first aids.

## CONTENTS OF FIRST AID BOX

1.	SMALL COTTON ROLL	1
2.	GAUZE BANDAGES (different sizes)	3
3.	DISPOSABLE GAUZE BANDAGES (different sizes)	3
4.	CREPE BANDAGE	1
5.	SAVLON/DETTOL (small bottle)	1
6.	POVIDONE IODINE OINTMENT	1 TUBE
7.	BETADINE SOLUTION	1 BOTTLE
8.	THERMOMETER	1
9.	SMALL SCISSORS	1
10.	CROCIN/PARACITAMOL TABLETS/ DIEGIENE TABLETS/PUDHINHARA TABLETS	6
11.	SMALL STEEL BOWL	1
12.	ASPIRIN TABLETS	50
13.	JOHNSON'S BAND AID TAPE STRIPS OR MICROPORE TAPE	25 1
14.	HAND SANITIZER	1
15.	CALAMINE LOTION	1
16.	BURNOL/SILVER SULPHADIAZINE TUBE	1 tube
17.	TRIANGULAR BANDAGES	2
18.	STERILE GLOVES PAIR	1

### ACTIVITY 1

Your friend was jumping the hurdles during the games period and suddenly misses her rhythm and falls down. She bruised her elbow and got a cut on her knee. What immediate medical care would you give to your friend?

### ACTIVITY 2

Your mother was cutting vegetables and was distracted by a serial on the television and suddenly cut her finger. Blood started coming out. You were sitting next to her. What will you immediately do?

### ACTIVITY 3

In the laboratory, while working with concentrated sulphuric acid it suddenly fell on your hands. What immediate medical care will you take?

### ACTIVITY 4

You were making Maggie at home, your finger got burnt, what will you do?

### ACTIVITY 5

Your friend had not eaten any breakfast. She was playing in the playground in the hot summer month and suddenly she fell unconscious. What immediate medical care will you give to your friend?

## ACTIVITY 6

You see a person falling down on the road as his motorbike skids. You rush towards him and you think that the pain and agony of the person is because of a dislocated bone or maybe a fracture of his right leg bone. What medical care will you immediately give to the victim before taking him to a doctor.

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