Disaster Management Lecture Note

November 16, 2022

Disaster

It is derived from Old Italian word *disastro*, which in turn comes from Ancient Greek word *dis* which means *bad* and *aster* means *star*. A disaster is an event that completely disrupts the normal ways of community.

Hazard

A potentially damaging physical events, phenomena or human activity that may cause loss of life or injury, property damage, social and economic disruption or environmental degradation.

Types of hazards :

- Natural : Earthquakes, Floods, Tsunami, wildfire, landslides, volcanic eruption.
- Man-made : Industrial, engineering failures, biological hazards, wars and terrorism.

Classification of hazards:

- Sudden onset hazards: Earthquakes, Floods, Tsunami, wildfire, landslides, volcanic eruption.
- Slow onset hazards: Drought, desertification, famine
- Industrial / technological hazards
- Wars and civil strife
- Epidemic and pandemic

Difference between Disaster and Hazards

Disaster	**Hazard**
Disaster is an event which completely disrupts everything	Hazard is a situation for which there is a threat of life, health, environment etc.
Disaster is the cumulative results of hazard	Hazard is the outcome of disaster
Disaster is a sudden effect of natural or man-made cause	Hazard is potentially damaging the physical activity.

Definition 1 (Volcano) The sudden release of magma (hot materials) from the mountain peak through the vent opening from interior parts of earth's surface is called *volcano*.

Definition 2 (Earthquake) The violent shaking of earth's crust in irregular way in vertical or horizontal or in an angular ways is called an earthquake. Naturally, it happened due to the techtonics forces caused by the endogenics thermal conditions.

Definition 3 (Cyclone) The word *Cyclone* is derived from the Greek word *Cyclos* meaning the coils of a snake. Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. Cyclones are usually accompanied by violent storms and bad weather. The air circulates inward in an anticlockwise direction in the Northern hemisphere and clockwise in the Southern hemisphere.

Classification of cyclone:

- **Tropical Cyclone** Cyclones that developed the regions between the Tropics of Capricorn and Cancer are called tropical cyclones. Tropical cyclones are large-scale weather systems developing over tropical or subtropical waters, where they get organized into surface wind circulation.
- **Extra Tropical Cyclone or Temperate Cyclones** occur in temperate zones and high latitude regions, though they are known to originate in the Polar Regions.

Definition 4 (Early Warning System) An early warning system can be defined as a set of capacities needed to generate and dissiminate in time for meaningful warning information of possible disaster.

Multi Hazard Early Warning System

It is the warning system that manages and deliver alerting message to the hazard effected areas where community is in risk to mitigate the impacts of hazards.
It is noted that in 2022, United Nations(UN) announced the declaration to ensure every person on earth has to be protected by the **Early Warning System** within 5 years.

The four components of early warning system :

- Risk knowledge and assessment of risk factors of any comin disaster
- Detecting the hazard or disaster, technical monitoring for evacuation
- Early warning communication in community and dissemination of warning system
- Notification and activities in general disaster preparedness and community response capabilities.

General preparedness for various type of disaster:

Flood

Part-I

If needed to evacuate:

1. Raise all the necessary furniture on bed of a room
2. Cover all drain holes to prevent backflow of water
3. Turn off power and gas connections
4. People should move to higher ground
5. Carry the emergency kit
6. People should not enter in deep flooded water

Part-II

When flood likely to hit:

1. Keep mobile phone charged
2. Always be alert
3. Don't ignore the animals to save their lives if possible
4. Perepare an emergency kit containing emergency medicines, dry food, drinking water, torch with batteries, candle, match box and first aid items etc.

5. Save your valuable items as possible

Part-III

During the flood:

1. Don't take risk in flood water
2. Watch your footstep while moving from one place to other place.
3. Stay away from electric poles
4. Take hygenic food and dry fruits and save drinking water
5. Ensure cleanliness in your surrounding area.

Part-IV

After the flood:

1. Protect children from harmful dampness(wetness) and inhygenic environment.
2. Consume hygenic food
3. Consume safe drinking water
4. Use mosquitoes net while sleeping
5. Use only clean water for domestic works and in wash rooms.

Earthquake

Before the earthquake:

1. Repair the plaster cracks and other deep cracks in building.
2. Follow BIS Code of practice for building structure.
3. Heavy objective in house should be kept in lower platform.
4. Repair defective electric wiring and connection
5. Identify the safe place in indoor and outdoor.
6. Know the emergency contact no. of local authority

Preparation of emergency kit:

1. Torch with working batteries
2. Small radio, battery operated
3. First aid kit which contain emergency medicines, band aid, cotton etc.
4. Storage of dry food and safe drinking water
5. Match box and candle
6. Water purifier tablets.

Definition 5 (Epidemic) Epidemics are mainly concerned with the outbreak of diseases within a country. Example, Epidemic plague, SARS (Severe Acute Respiratory Syndrome), Coronavirus (COVID-19) etc.

Epidemic

What to do:

1. Store dry food and adequate safe drinking water
2. Periodical health checkup and medicines needed.
3. Surrounding area should be clean and don't keep water stagnant
4. Keep social distancing as required
5. Cover mouth and nose by mask
6. Avoid touching your eyes and nose
7. Use hand sanitisers frequently and wash your hand by medicated soap as and when-required.
8. Prepared group of volunteer to assist people in emergency.

Cold Wave

What to do:

1. Stay indoor and minimised your travel.
2. Keep emergency kit ready with medicines, warm clothes, snow shovel etc.
3. Listen always to local radio for alerting message
4. Change the wet clothing frequently
5. Watch the symptoms of frostbite like numbness white or pale appearance in body etc and to convert with the doctor.
6. Maintain ventilation while using heater in room.

Human Induced Disaster or Man Made Disaster

It is the disastrous event which is induced by human activities, human intent, negligence and errors or involve a failure of man made system.
Example, outbreak of War, terrorism, emission of industrial poisonous gas, leakage of oil, chemicals, bio-chemical weapons, intrusion of poisonous chemicals in air or water etc.

Nature or characteristics of Man Made Disaster

- It is outcome of invention, discoveries and technological development by men.
- Carelessness and ill-management of hazardous chemicals in industries factories etc.
- Engineering or construction failure
- It is the result of Industrial conflicts over different issues, for dominance, security etc resulting in outbreak of war, riot or civil war etc.
- It might be result of dangerous biological communicable effecting lives.

Types of Man Made Disaster

1. Industrial hazards due to emission of poisonous gas, nuclear leakage or unscientific disposal of materials or nuclear radiations etc.
2. Engineering failure (E.g: Collapse of building, dam, bridges etc)
3. Biological hazards (Epidemic and Pandemic of dreaded virus)
4. Wars (World War, Civil War etc)
5. Terrorism (individual or group of men causes for mass killings)

Biological Health Hazards

The term biological health hazards refers to those materials and biological substances that makes an impact and threat on the health of living organisms, primarily that of human beings. These materials include medical waste on sample of microorganisms, virus or live toxic substance which can make negative impacts on human beings and other living animals, insects, plants and trees etc.
At present bio-chemical weapons are one of the main threat to all kinds of living beings and environment interms of hazards.

Factors of Biological Health Hazards

- Virus, bacteria or harmful organisms.
- Harmful chemicals or industrial wastes or chemical disposals in water.
- Poisonous contaiminations of land, air or water.
- Lack of public awarness
- Pollution of land, air, water due to rapid increase of population in every year, especially in India, china and other countries.
- Development of bio-chemicals weapons.
- Increase of hazardous chemicals industries and factories.

Management and Planning in Disaster Management

What is Disaster Management ?

DisasterManagement is the system and process of facing disaster with regards to reducing and avoiding the great impact of disaster on human beings, environments and properties.

What are the activities of disaster management ?

1. **Preparedness:** prior to disaster, during the disaster and after the disaster. E.g: Early Warning System, Emergency Operation etc.
2. **Recovery:** It is the set of activities following a disaster. E.g: Housing Care Facilities, Medical Aids etc.
3. **Mitigation:** It is the bunch of activities to reduce the affect of disaster. E.g: Building Code, Zoning the areas, Vulnerabilities Analysis etc.

Principles of Disaster Management:

It is the resposibility of Govt. to manage the activities related to reduce the impact of disaster.

Various categories of the principles of disaster management are as below:

Planning:

1. To have a clean and logical approach
2. To provide common reference
3. To assist the informations for organisational functions
4. To assist proper coordinations in activities.
5. To distributes responsibilities to various organisations
6. Review and evaluation of requirements
7. To focus on training related to Disaster Managements.

Organisation:

1. All the organisations should be headed by National Disaster Management Authority (NDMA)
2. Utilization of Govt. structure or resources.
3. Community involvement
4. Special system for emergency operations.
5. Proper guidance and direction from coordinating authority
6. Early Warning system as requires
7. Necessary survey works and assessment.
8. Information Management