

## Manmade Disasters - An Overview

We have so far discussed possible disasters that can result from natural hazards. We have also seen how human actions in some cases aggravate the disastrous effects of natural hazards. For instance, improper constructions can increase vulnerabilities to earthquakes in seismic zones where earthquakes are more probable. In drought prone areas, wastage of water, or environmental degradation by human actions can magnify drought conditions.

But disasters can also be manmade, as mentioned in the introduction to this book. For instance, rail, road or air accidents are manmade disasters. The threat of serious disaster looms large from the possible use of weapons such as nuclear bombs or the atom bomb that was dropped over Japan during World War II. These weapons are commonly called Weapons of Mass Destruction (WMD), which lead to the breakdown and collapse of social, political and economic systems that sustain communities. Inevitably agriculture and food production are major casualties.

***Man-made disasters*** cost the most in terms of human suffering, loss of life and long-term damage to a country's economy and productive capacity.

Let us now look at the various types of manmade disasters briefly:

### WMD

WMD can be broadly classified into three categories – as those that facilitate nuclear, biological and chemical warfare.



The cloud caused by the atomic explosion over Hiroshima

On August 6, 1945, an American B-29 bomber, the "Enola Gay" dropped an 8,900-pound atomic weapon over the city of Hiroshima. Two thousand feet above the ground, the bomb, dubbed "Little Boy" detonated, instantly leveling almost 90% of the city. The destruction was incredible. More than 10 square kilometers of the city were instantly and completely devastated; a City center was literally vaporized. The ensuing fireball spread and engulfed many more kilometers of the City in fire. 66,000 people were killed, and 69,000 injured

On August 9, another plane dropped a larger bomb, code-named "Fat Man" over Nagasaki. Local geography spared Nagasaki from the near total devastation suffered by Hiroshima; but one third of the city was destroyed. It killed 39,000 persons, injuring 25,000 more.

With the advancement of scientific research in the world, several countries have acquired the technology to produce Nuclear Arms, which are more destructive and harmful than the atom bomb used more than half a century ago. There is also a risk of accidental exposure to harmful radiation from the several nuclear reactors that are used for generation of power. Theft of nuclear material can enable the creation of crude bombs commonly known as 'dirty bombs' which can be used by anti-social elements or terrorists.



The famous mushroom cloud over Nagasaki caused by atomic explosion

A young girl who was evacuated from Hiroshima a few days before the explosion said- "Suddenly I felt something warm on my left cheek and turned back. It seemed like a strong reflection from a mirror. Then a roaring sound shook the whole village. While I was wondering what had happened, a column of clouds appeared above the mountains in the south in a bright pink colour. Gradually it assumed the shape of a mushroom and rose to the sky. I felt something unusual had happened. However, I didn't ever imagine that the huge city of Hiroshima had instantaneously become a sheet of fire." She lost her parents in the incident.

## How can we protect ourselves from nuclear radiation and attacks?

- ◆ Don't panic in the event of a nuclear attack or accident. Common indicators of radioactivity are nausea, dizziness, vomiting and disorientation, with no odour but a wave of heat. A nuclear explosion is followed by a 'blast' like the mushroom cloud in the picture above, which can cause instant blindness if viewed.
- ◆ Close all doors and windows, and stay indoors till further communication from the Government. Radioactivity does not penetrate solid structures, though fire may cause damage to buildings.

### Activity

- ◆ Find out how Potassium Iodate tablets can be used to counter exposure to radioactivity.

## Chemical Disasters

Chemical Disasters are caused by industrial accidents, irresponsible handling of hazardous chemicals, or by their deliberate use for destruction. Poisonous gases can cause wide spread devastation because of their nature: they spread easily, and affect large areas. Chemical WMD are relatively easy to manufacture using simple chemical processes, and chemical agents are easily available. Further, they are difficult to detect since chemical WMD are colourless and odourless

'An alarm call to mankind'... The Bhopal Gas Tragedy of December 1984

The Bhopal Gas Tragedy is a catastrophe that has no parallel in industrial history. In the early hours of December 3, 1984 a rolling wind carried a poisonous gray cloud past the Union Carbide Plant in Bhopal, Madhya Pradesh. Forty tons of Methyl Isocyanate (MIC) spread throughout the sleeping city. An estimated 2500 people died, people whose hopes and dreams were ironically bound with the technology and affluence the plant symbolised. About 300,000 suffered from agonising injuries from the disastrous effects of the massive poisoning

Residents awoke to clouds of suffocating gas and began a desperate flight through the dark streets. No alarm ever sounded a warning and no evacuation plan was prepared. When victims arrived at hospitals breathless and blind, doctors did not know how to treat them since emergency information on antidotes was not available.

## ACTIVITY:

How can we prevent and prepare for chemical disasters?

1. Find out what industries exist close to your city or village, and whether any of the chemicals they use are hazardous.
2. Find out whether an emergency plan is in place to deal with industrial accidents, and what antidotes can be used in case of poisoning of people, animals, water sources, etc.
3. Find out whether your local medical association is aware of how to treat patients suffering from exposure to these chemicals
4. Make a report of your findings and take the help of your teacher to inform suitable authorities such as the District Magistrate, Block or Taluka Development Officer, or Municipal Corporation as well as the closest PHC
5. Make a chart of simple Do-s and Don't-s in the event of a chemical disaster based upon information gathered from the industry



Do you know

- 1 That the first symptoms of a possible chemical leakage are irritation, burning and redness in the nostrils and eyes, followed by nausea, dizziness and disorientation? Pungent or bitter-sweet smells indicate the presence of a gas in the air
- 2 That panic induced fleeing during a gas leakage is harmful? Stay calm, in the same place, put a wet cloth on your face and breath through it. Most gases will dissolve in water.
- 3 Lying down close to the ground may help, since most hazardous gases are lighter than air, and will tend to rise upwards.

## Anthrax 'likely' in US postal deaths



A Postal worker in India with a package from the US during the anthrax scare of 2001

Source: BBC News Service

Two postal workers in Washington DC who died from unexplained causes were "likely" to be infected with anthrax, US officials said. Their bodies are being tested for anthrax symptoms amid circumstances described by health officials as "highly suspicious". The revelation came as US authorities confirmed that a second postal worker in the city had tested positive for anthrax infection, bringing the number of cases of infection nationwide to 10. The new victim had the more serious inhaled form of the disease. Of the cases of anthrax that have now been identified in the US, six are skin anthrax and four are inhaled anthrax. One man, an employee of a tabloid newspaper in Florida, died as a result of anthrax inhalation.

Biological weapons are referred to as a "poor man's nuclear bomb" because they are easy to manufacture, can be deployed without sophisticated delivery systems, and have the ability to kill or injure hundreds of thousands of people. Simple devices such as crop dusting airplanes or small perfume atomizers are effective delivery systems for biological agents. In contrast to chemical, conventional, and nuclear weapons that generate immediate effects, biological agents are generally associated with a delay in the onset of illness (hours to days). Moreover, illnesses from biological weapons are not likely to be recognized in their initial stages. With highly transmissible agents (eg, plague and smallpox), the time delay in recognition can result in widespread secondary exposure to others, including doctors and health staff.



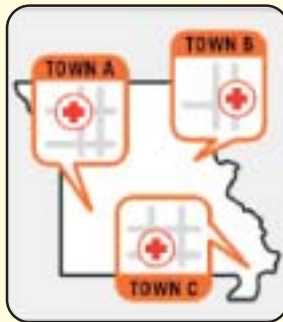
### Do you know

- ◆ That 100 gms. of Anthrax released over a major city may cause up to 3 million casualties

### DO-S and Don't-s for Biological Disasters:



1.



2.



3.



4.



5.



6.

#### ACTIVITY:

Can you organize a mock drill in your class for the various manmade disasters, to see how you will prepare and respond to them?



## Accidental Disasters

A large number of railroad accidents take place in India. Every other day, people get injured or die in small accidents. Larger railway accidents including collisions and derailments cause huge losses to life and inflict injuries and disabilities to many more.

“We saw railway coaches piled up like a multi-storey building. The one on top was burning.”



The Railway Accident at Gaisal, 1999

- A volunteer at the Gaisal Tragedy of August 1999 in West Bengal.

### Activity:

Organise a Traffic Safety Week in your school with the help of your teachers. Ask your local authorities how you can create awareness among commuters.

Various studies being done to analyse the occurrence of various kinds of disasters are showing that fire accidents are very large in number in India. Moreover, the studies also show that the amount of damage from fire hazards over a period of time has often been more than the damage caused by natural hazards such as cyclones or floods. From the nearest fire station, find out what are the simple Do-s and Don't-s that you can follow and create awareness on, to reduce fire accidents, and respond effectively to them.



### EXERCISES

1. What causes manmade disasters?
2. How do manmade disasters affect us?
3. How would you protect yourself and your family in the case of a nuclear, disaster?
4. What simple Do-s and Don't-s can you list in case of a biological disaster?
5. How would you recognize the presence of a poisonous gas in the air? What precautions would you take to protect yourself and your family against its harmful effects?
6. Describe how you would help people involved in a road accident in your neighborhood.