



TYPES OF ENVIRONMENTAL DISASTERS

Environmental disasters are the realization of hazards to serious impacts, damages and losses, initiating in some or the other environmental systems or resources. These hazards are related to various environmental processes and systems including geo-morphological, topographical/landscape, atmospheric/ climatic, geo-chemical, edaphic, hydrological, hydrodynamic, features, along human interventions including industrial/urban, etc. These are discussed under following four headings¹:

- Geo-hydrological disasters
- Chemical accidents / disasters
- Industrial Environmental Disasters
- Climate Change & Disasters

Geo-Hydrological Disasters

Geo-hydrological disasters are the disaster incidences coming out of various earth and environmental - geological and hydrological processes, naturally or triggered by a man-made initiating event or phenomenon

These include the following:

- **Landslide hazards**²

Landslides are simply defined as down slope movement of rock, debris and/or earth under the influence of gravity. This sudden movement of material causes extensive damage to life, economy and environment. It is the most common and universally accepted collective term for most slope movements' of the massive nature. The term has sometimes been considered unsuitable as the active part of the word denotes sliding, whereas it connotes even movements without sliding like fall, topple, flow etc.

- **Flooding³**

Floods are among the most frequent and costly natural disasters. Conditions that cause floods include heavy or steady rain for several hours or days that saturate the ground. Flash floods occur suddenly due to rapidly rising water along a stream or low lying area.

A flood is an excess of water (or mud) on land that's normally dry and is a situation wherein the inundation is caused by high flow, or overflow of water in an established watercourse, such as a river, stream, or drainage ditch; or ponding of water at or near the point where the rain fell. This is a duration type event. A flood can strike anywhere without warning, occurs when a large volume of rain falls within a short time.

- **Earthquake disaster and dam induced seismicity²**

Earthquakes are one of the most destructive of natural hazards. An earthquake occurs due to sudden transient motion of the ground as a result of release of elastic energy in a matter of few seconds. The impact of the event is most traumatic because it affects large areas, occurs all of a sudden and is unpredictable. They can cause large scale loss of life and property and disrupts essential services such as water supply, sewerage systems, communication and power, transport, etc. They not only destroy villages, towns and cities but the aftermath leads to destabilize the economy and social structure of the nation.

- **Hydrological and geochemical drought³**

Drought is a temporary aberration unlike aridity, which is a permanent feature of climate. Seasonal aridity (i.e. a well-defined dry season) also needs to be distinguished from drought. Thus drought is a normal, recurrent feature of climate and occurs in all climatic regimes and is usually characterized in terms of its spatial extension, intensity and duration. Conditions of drought appear when the rainfall is deficient in relation to the statistical multi-year average for

a region, over an extended period of a season or year, or even more.

- **Cyclones and windstorms^{3, 4}**

Cyclone is the term used globally to cover tropical weather systems in which winds equal or exceed ale force (minimum of 34 knot, i.e., 62 kmph). These are intense low pressure areas of the earth atmosphere coupled system and are extreme weather events of the tropics.

Windstorm is a wind that is strong enough to cause at least light damage to trees and buildings and may or may not be accompanied by precipitation. Wind speeds during a windstorm typically exceed 55 km (34 miles) per hour. Wind damage can be attributed to gusts (short bursts of high-speed winds) or longer periods of stronger sustained winds.

Chemical Accidents/Disasters¹

Chemical accidents are the failures, mishaps and natural processes of environmental releases of hazardous chemicals flammable/explosives, toxic, corrosive, radioactive, that may lead to a disasters of fire, explosion, etc and due to strong heat waves, shock waves etc. causing damage to life, property, buildings/structures, critical infrastructures, environmental resources and the public governance in general.

Industrial Environmental Disasters¹

Many industries that are based on management of natural or man-made environmental resources, bio-products (agri/horti/forestry), water, land/soil, chemicals etc. and the structures, modifications, activities relating to these industrial processes, for example, water resource development projects like canal projects, dams, embankments, lakes, reservoirs, mining underground or open case, hydro-power projects, thermal power projects, with variety of risks for example, dam breach, upstream flooding, siltation, water-logging, soil salinization, fly-ash

dam breach, leachate infiltration, tailing hill failures, acid mine drainage, slope instability, gas poisoning, etc.

Climate-Change and Disasters¹

Climate-change, a phenomenon described as resultant global temperature rise, is known to have accelerated the melting of glaciers, and thus exacerbated the risks and likely disastrous consequences on the people and their land-uses. Besides this the increase in the incidence of abrupt variability in climate patterns has posed major threats to human environment. It often occurs in the form of heavy precipitation over shorter periods, unexpected lack of rain in certain areas, thus posing threats to life, property, natural resources and the livelihood support systems in the mountains. Populations had adapted to the known threats over the evolutionary periods, but now under the climate-change age, have to learn new adaptations in terms of livelihoods, environmental resource management practices, and living including disaster responses, health, food, etc.

Top Environmental Disasters List⁶

- Bhopal: the Union Carbide gas leak
- Chernobyl: Russian nuclear power plant explosion
- Seveso: Italian dioxin crisis
- The 1952 London smog disaster
- Major oil spills of the 20th and 21st century
- The Love Canal chemical waste dump
- The Baia Mare cyanide spill
- The European BSE crisis
- Spanish waste water spill
- The Three Mile Island near nuclear disaster
- Global epidemics (the Plague, Spanish Flu and AIDS)
- The Bangladesh arsenic crisis
- The 2004 Asian earthquake and tsunami
- Hurricane Mitch
- Izmit: the 1999 Turkish earthquakes

- The 1953 Dutch flood disaster
- Brazil: the 1998 Roraima wildfires
- Phillipines: the Mount Pinatubo volcanic eruption
- The 1925 Ellington, Missouri tornado
- The Beijing and Queensland dust storms

References

¹ http://www.saarc-sadkn.org/theme_env_env_typ.aspx

² http://nidm.gov.in/PDF/Disaster_geo.pdf

³ http://nidm.gov.in/PDF/Disaster_hymet.pdf

⁴ <http://www.britannica.com/EBchecked/topic/1186291/windstorm>

⁵ <http://www.lenntech.com/environmental-disasters.htm#ixzz3CQpTed71>