

A case study of delhi

Education



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Disaster is a phenomenon that involves a sudden accident or a natural catastrophe that causes great damage or loss of life and detrimental effect on assets. It is an event that has unfortunate consequences. Disasters happen due to natural and man-made causes which have impact on human and other living beings and colossal damage to property and establishments.

Natural Types of disasters are caused due to forces of nature that include Earthquakes, Tsunami, Landslides & debris flow, Cyclones, hurricanes, typhoons, tornadoes, thunderstorms and lighting; Floods and flash floods, Drought and water shortage, famines agricultural diseases & pests, etc.

Unnatural or Man-Made disasters, also called as anthropogenic hazards, are caused by human action or inaction.

Anthropogenic hazards have severe and adverse effects on humans, eco-organisms and ecosystems, property and establishments. Anthropogenic hazards include the disaster due to war, terrorism, social and civil disorder; Industrial hazards include industrial accidents, releases of hazardous materials, mining accidents, release of toxic gases, etc;

Engineering hazards include failures of structures, buildings, dams etc; rail accidents, collisions and sinking of ships etc; waste disposal hazards like Industrial release, domestic wastes, nuclear and radiological wastes; Hazardous materials such as Organo-halogens, Toxic metal; Nuclear and Radioactive Hazards; Rail, Road and Aviation hazards; Aero-Space Hazards and Bio-hazards.

CBRN Disasters

CBRN disaster is one of the man-made or anthropogenic disaster and is an outcome of science and technology. CBRN material is amplified as for chemical, biological, radiological, and nuclear material. CBRN materials cause great harm either caused due to deliberate action of terrorists or non-deliberate causes like human error or accidents.

CBRN materials of weaponized nature can be easily delivered using conventional bombs (e. g., pipe bombs), improved explosive materials (e. g., fuel oil-fertilizer mixture) and enhanced blast weapons (e. g., dirty bombs). Non-weaponized CBRN materials that are at high risk are referred to as Dangerous Goods (DG) or Hazardous Materials (HAZMAT).

An accidental CBRN incident is an event caused by human error or natural or technological reasons, such as spills, accidental releases or leakages. These accidental incidents are usually referred to as HAZMAT accidents. Outbreaks of infectious diseases, such as SARS, or pandemic influenza are examples of naturally occurring biological incidents.

A Brief on CBRN Disasters is as follows:

Chemical Disasters

The chemical disasters can be categorized into industrial and non-industrial (weapons). Chemical, being at the core of modern industrial systems, poses serious concern for disaster management within government, private sector and community at large. Chemical disasters may be traumatic in their impacts on human beings and have resulted in the casualties and also damages nature and property.

The elements which are at highest risks due to chemical disaster primarily include the industrial plant, its employees & workers, hazardous chemicals vehicles, the residents of nearby settlements, adjacent buildings, occupants and surrounding community. Chemical disaster non-industrial (weapons) Chemical weapons are those that are effective because of their toxicity: that is, their chemical action can cause death, permanent harm or temporary incapacity. Some of the toxic chemicals are phosgene, hydrogen cyanide and tear gas.

Biological disasters

These are causative of process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive substances that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Biological weapons are weapons that achieve their intended effects by infecting human, flora and fauna with disease-causing microorganisms including viruses, and pathogenic organisms. The disease caused is due to the result of the interaction between the biological agent, the host and the environment.

Nuclear and Radioactive Disasters

A nuclear and radiation accident is an event that has led to significant consequences to people, the environment or the facility. The consequences include lethal effects to individuals, radioactive isotope to the environment,

or reactor core melt. The reason for the incident can be due to a human error, accident or malicious act.

The outcome of any nuclear explosion is release of radiations that include gamma, neutron, and ionizing radiations. During a nuclear explosion, people near to ground zero would receive lethal doses of radiation; however, they get killed by the blast wave and thermal wave. The residual radiation from a nuclear explosion is mostly from radioactive fallout.

Any radiation incident resulting in, or having a potential to result in, exposure to and/or contamination of the workers or the public, in excess of the respective permissible limits can be termed as a nuclear/ radiological emergency.

Characteristics of CBRN incidents are following:

- Causes mass casualties and loss of lives.
- Creates an extremely hazardous environment with long term effects.
- Relatively easier and economical to produce chemical weapons.
- Difficulty in detecting in determining the type of material involved
- Necessitates organised, trained and equipped personnel to give rescue and cure.
- Requires pre-coordination within health services to establish medical treatment protocols, to stock pharmaceuticals and to determine treatment requirements and establishing coordinated incident management/response procedures for such incidents.
- Highly challenging to counter it. Difficulty in diagnosis and then first aid, and cure.

CBRN weapons are likely to be deployed:

- Against highly dense population of civilians especially at higher echelon or VIP targets
- Strategically important targets and infrastructure such Power plants, chemical and petrochemical facilities, plants, gas stations, nuclear facilities, etc.?
- On the Security forces and their establishments.
- Affect the psychological and political will and create national insecurity.

Countermeasures for CBRN disasters include:

- Protection equipment and kits for personal and community.
- Medical emergency aids and therapy.
- Government strategies, National intelligence systems, standard operating procedures, training and sensitization of public.
- Administrative machinery for pro-active and re-active mitigations.
- International laws and Regulations.

Management of CBRN Disasters in India and Disaster Management Act 2005

Since, from drafting of Indian Constitution and independence of India in 1947, the subject Disaster Management could not find a suitable entity in the Constitution of India. It is only in the year 2005 the Disaster Management Act was enacted and came into force. This Act provides a legal and institutional framework at national, state and district levels for the creation of specialized disaster management institutions.

Post enactment the perception about disaster and its management has undergone a change. Now the definition of disaster includes not only the

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events emanating from natural and man-made causes, but even those events which are caused by accident or negligence. In pursuance of the Act, the Ministry created national level institutions like:-

- National Institute of Disaster Management (NIDM),
- National Disaster Management Authority (NDMA),
- National Disaster Response Force (NDRF) and
- National Executive Committee (NEC) in 2006.

Statement of the Problem

One of the challenging aspects in terms of security to any nation in the coming decades is CBRN incidents. The cessation of cold-wars and straight battles, with rise of terrorist nations has given way to covert methods such as CBRN attacks to the enemies of the state.

Further, the exponential growth of industries and piling of hazardous substances pose enormous threat to all living kinds and non-living assets. CBRN attacks are an easy means to hamper the progress of a state. In the present day scenario when economic competition among nations is high, CBRN attacks are cause of concern from both safety and security point of view.

India's economic success in recent decades faces significant challenges to security alongside its opportunities for further growth. The security can be breached either by its own internal failures due technical causes or the other from hostile agencies. Advancement in technology has triggered the means and methods for the hostile agencies to cause harm to our country.

In the present scenario, the threat perception is CBRN attack cannot be denied. Initially, CBRN perceived as threats to military alone, but today civilian population are easy and influential targets. Thus, the need for the civil authorities to prepare against CBRN incidents is of paramount importance. This aspect also imposesto examine the CBRN issues scientifically and devise strategies to prepare against them.

Disaster Management (DM) Act 2005 defines the role of various authorities and stakeholders (centre-state-local) for disaster management in India. In the event of any disaster, the DM forces come into action for rescue and aid. However, for CBRN disasters there seems that the subject knowledge is limited to the people who are engaged either professionally of academically with CBRN issues. Preparedness, training, evaluation, educationand awareness are the key to mitigate and minimize personal injuries and loss of life due to disaster.

Does questions arise that are the various stakeholders aware and fully prepared to respond effectively and in a responsible manner to approach for disaster rescue? To manage CBRN disasters, judicial engagement of stakeholders is highly crucial. It is also important to engage various non-governmental agencies, organizations and individuals towards buildin