Disaster Management

Disaster Mitigation & Preparedness

Natural Hazards

- A natural hazard is a major or adverse event resulting from natural processes effecting the earth.

For Example:
Earthquake
Floods
Volcanic Eruption
Landslides
Droughts
Cyclones
Tornado


What are cyclones?
Types, Causes and Effects
mapsofindia.com

Cyclones

- Cyclones are violent storms and high winds due to bad weather. The air circulates inward in an anticlockwise direction in the Northern hemisphere and clockwise in the Southern hemisphere.
- Velocity – 50 km/hr
- Diameter – 1000-4000 km
- Anti-clock Wise called Cyclones.
- Clock Wise called Anti-Cyclones.
- Last For – 5 to 10 days
- Also called hurricane, typhoons.

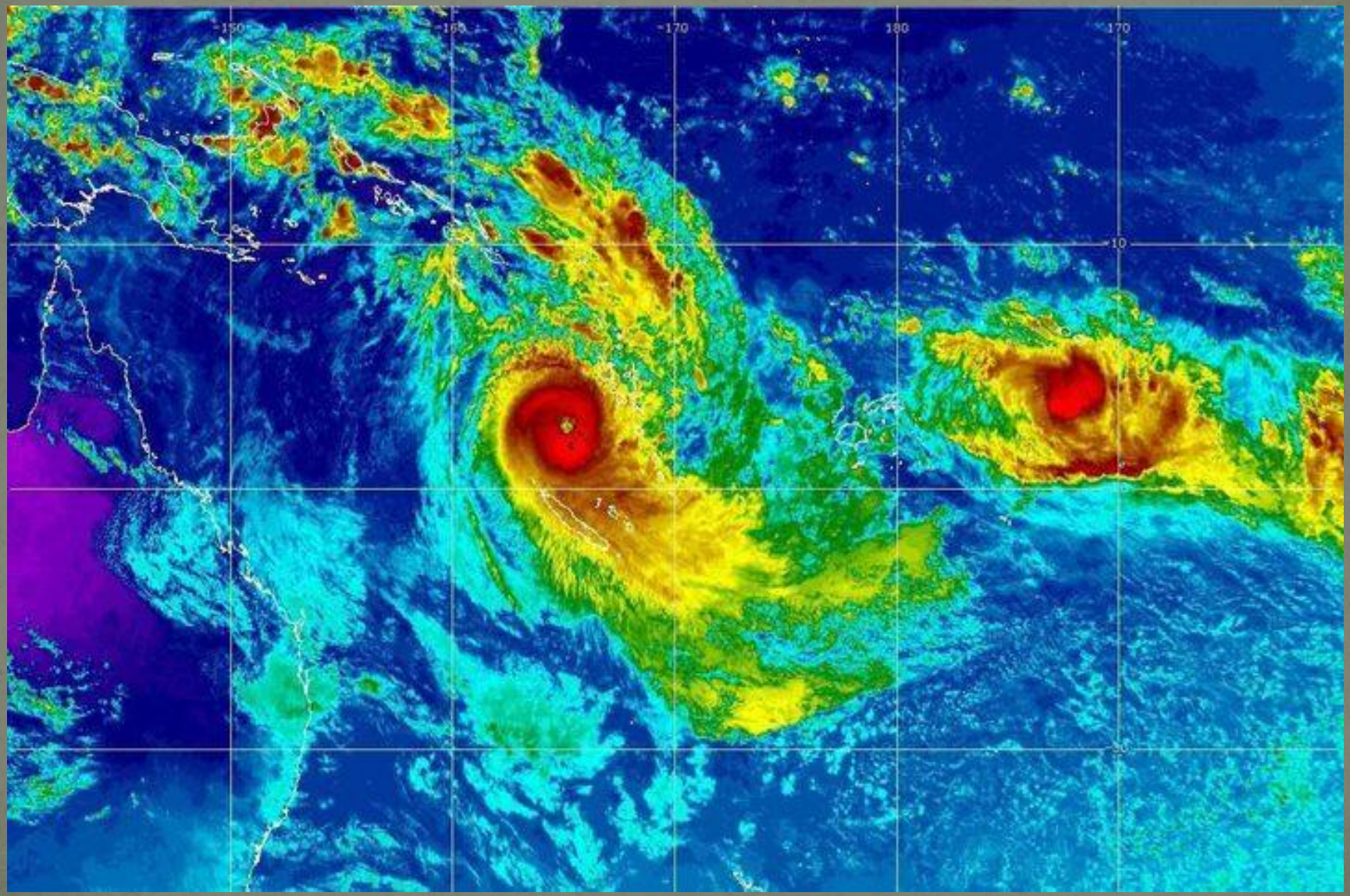
Causes of Cyclones

- Low pressure area causes air movement. High to low.
- Rotation of the Earth changes direction and velocity of moving air.
- Heat, that adds vertical movement of air. All those movements cause friction which causes lightning, which makes storms that suck in more air and soon a big blob of storms spinning.

Simple version

Satellite Tracking

Satellite Tracking



Consequences Of Cyclones

- Loss of Human lives
- Damage to houses, building
- Supply lines
- Crops/Food Stocks

- Reduction in Family Income
- Unemployment
- Disrupt Economy

https://www.youtube.com/watch?v=nJwHFt7h11k

Mitigation Strategies Of Cyclones

Structural Mitigation

- Cyclone Shelters
- Engineered Structures
- Protection against Wind
- Coastal belt plantation

Non- Structural Mitigation

- Hazard map for Vulnerable areas
- Better Forecasting Techniques

TORNADO

- A tornado is a violent rotating column of air extending from a thunderstorm to the ground.

Formation of Tornado –

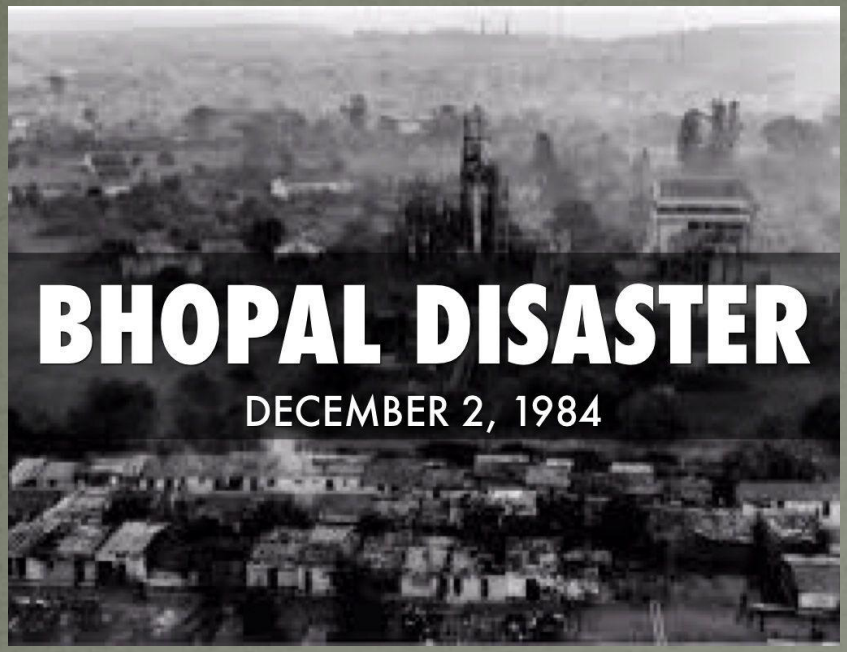
- A large thunderstorm occurs in a cumulonimbus cloud
- A change in wind direction and wind speed at high altitudes causes the air to swirl horizontally
- Rising air from the ground pushes up on the swirling air and tips it over
- The funnel of swirling air begins to suck up more warm air from the ground
- The funnel grows longer and stretches toward the ground
- When the funnel touches the ground it becomes a tornado

https://www.youtube.com/watch?v=P7aRR86VfTY

https://www.youtube.com/watch?v=Gak8Qu3u3YY

MAN MADE HAZARDS

- Industrial Hazards – Any condition/substance produced by industries that may cause injury or death to personnel or loss of product or property.
- Types of Industrial Hazards – Fire, Explosion, Toxic Release, Chemical hazard.
- Causes - Flammable Chemicals & Processes , Heat producing device, Electrical Equipment
- Mitigation – Proper handling & Control , Fire Protection Equipments, Risk Assessment, Training, Proper Storage.



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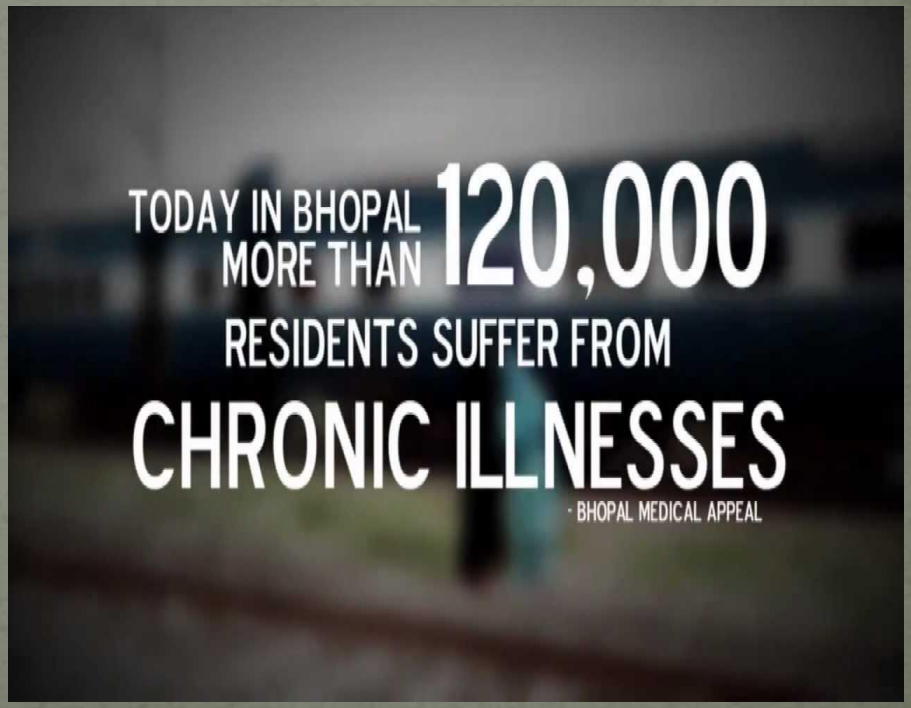
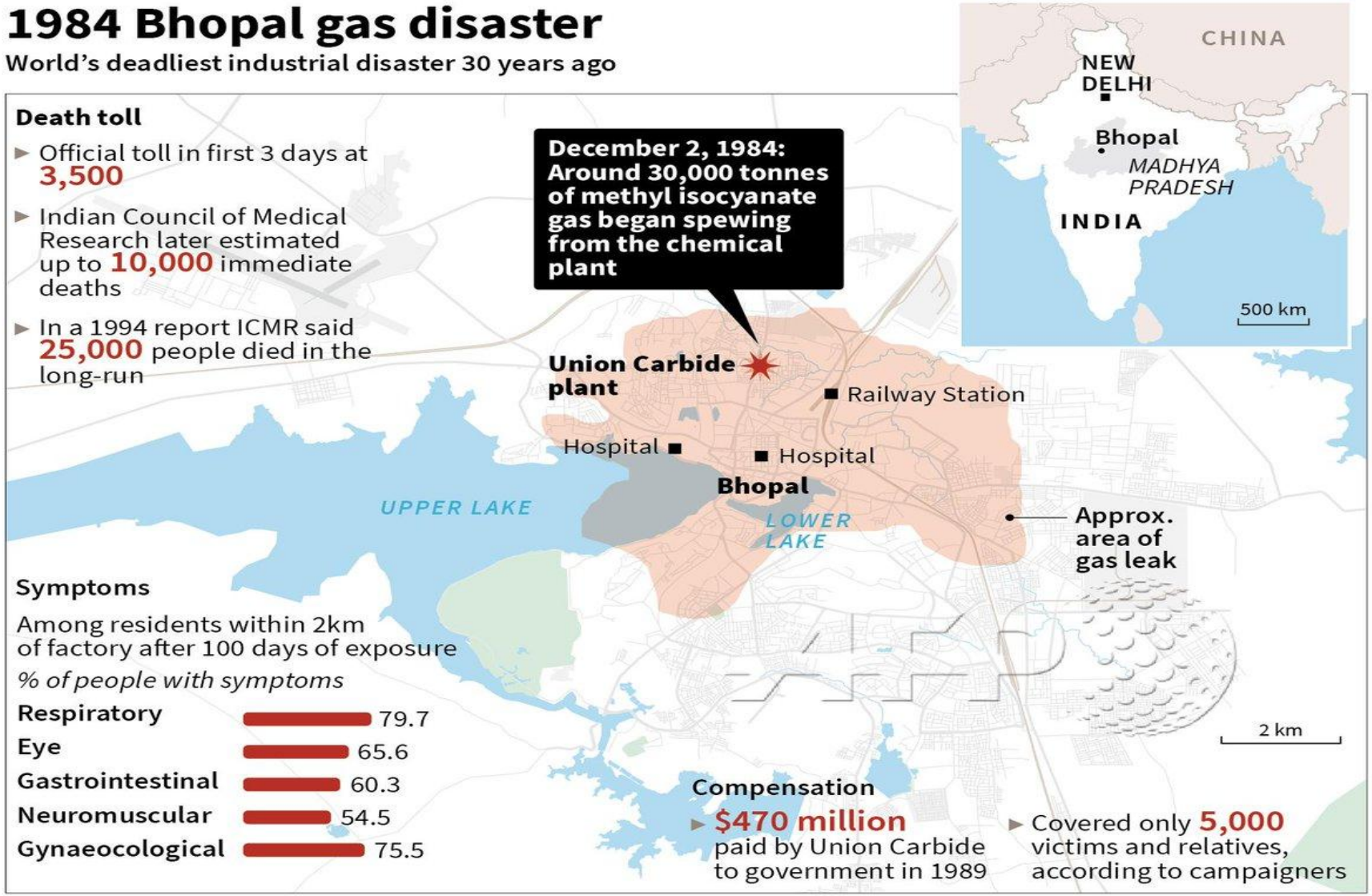


1984 Bhopal gas disaster

World's deadliest industrial disaster 30 years ago



Source: India CSE/ICMR

AFP

Other Man Made Hazards

- NUCLEAR/CHEMICAL/BIOLOGICAL TERRORISM – use & threat of nuclear/chemical weapons In acts of terrorism.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Disaster Management

Emergency Management System

Recovery Operations In Disaster Management

- Recovery phase starts after the immediate threat to human life.
- Main Objective is to bring the affected area back to into normal.
- Provide housing & Restoration

Control Measures

- Preventive Measures - preventing an event from occurring.
- Detective Measures – Detecting unwanted events.
- Corrective Measures – Restoring the system after an event.

Phases of Disaster Recovery

- Identifying & corresponding critical facility operations – power & equipment break
- Assessing Risk – assigning different faculity teams for different operations
- Devising A disaster recovery plan – identifying critical systems and functions
- Minimizing disaster impact after occurrence of disaster – turning of water & gas supply

Reconstruction & Rehabilitation

Rehabilitation – a phase between immediate reliefs and actions taken after the occurrence of disaster to :

- Resume normal pattern of life
- Debris Removal
- Restoration of public services
- Provision of temporary housing

Reconstruction & Rehabilitation

Reconstruction – full restoration of economy & all services, local infrastructure, replacement of damaged physical structures, social and cultural life. It involves:

- Permanent Rebuilding
- Improved Infrastructure
- Better Disaster planning

Critical Issues related to Reconstruction & Rehabilitation

- Monitor the situation – revise decisions
- Balance psychological, social & economic needs
- Recognize Communities – elders, children & poor minorities
- Consider Less obvious needs
- Distinguish needs from wants – priority to worse affected
- Identify the capacities & resources of affected population – Self strengthen
- Ensure that all needs in all sectors & affected areas are assessed - priority to worse affected
- Identify the critical needs upon which other sectors may depend – communication, transportation, equipments & medicine

Incorporation of Available resources to plan Reconstruction & Rehabilitation

- **Funds**
  - Problems in savings, loans, tax relief
- **Materials**
  - Production & Transportation Problems
- **Equipment & Tools**
  - Clearance of debris, repair & reconstruction
- **Energy & Power**
  - Shortage of Fuel & power Supply
- **Land**
  - Not available or too Expensive
- **Human Resources**
  - Short Supply of technical/skills/non-slilled/labor staff
- **Adequate & Relevant Information**
  - Info on damages, losses, needs, resources, development & planning programs
- **Administrative**
  - Local/state/central Govt, NGO's, technical groups and other communities


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