

# Environmental Concerns and Disasters

## Environment

- It is everything that is around us. It can be living or nonliving things.
- It includes physical, chemical and other natural forces. Living things live here, they constantly interact with it and adapt themselves to conditions according to their surrounding environment.
- **Environmental degradation** is the deterioration of the environment through depletion of resources such as air, water and soil. It is the destruction of ecosystems, habitat destruction, the extinction of wildlife and pollution.
- The things which are responsible for contamination of air are called **air pollutants**. These pollutants may result from
  - (i) **natural causes** like smoke or dust from forest fires or volcanic eruption.
  - (ii) **man-made causes** like burning of fuels, smoke from factories, etc.

## Effects of Air Pollution

- (i) **Smog** It comprises of smoke and fog. It contains oxides of nitrogen and causes problems in breathing, cough, etc. Also there is visibility problems in affected areas.
- (ii) **It's cause is acid rain** which is very harmful for both living and non-living things. It is caused by Sulphur dioxide and Nitrogen oxide.

## Environmental Pollution

It is the effect of undesirable changes in our surroundings that have harmful effects on plants, animals and human beings. It can be of different types.

### Types of Pollution

Pollution is mainly categorised into following three types :

#### 1. Air Pollution

- It is the contamination of air, which takes place due to unwanted substances which causes harmful effects on both biotic and abiotic components.

### Ways to Prevent Air Pollution

- Afforestation; by planting more trees in environment.
- Use CNG vehicles instead of petrol and diesel.
- Try using public transport more.
- Use renewable sources like solar energy, wind energy to produce electricity.

## 2. Water Pollution

- The addition of undesirable and unwanted material in water which makes water harmful for biotic and abiotic components is called **water pollution**.
- The things which pollute the water are known as **water pollutants**. For example, Washing of clothes near source of water and discharging industrial waste in water bodies.

### Effects of Water Pollution

- The harmful chemicals like arsenic, lead, etc discharged by various industries have led to many bad effects like impure water, acidity changes in water, etc.
- Various diseases like cholera, diarrhoea, jaundice, etc results from water pollution.
- Water pollution also affects aquatic animals badly.

### Ways to Prevent Water Pollution

- Industries must treat the waste before discharging them into water.
- Chemical process like Chlorination can be used for treating water.
- Proper sewage treatment plan must be there.

- The idea of 3R's **reduce, reuse and recycle** should be incorporated for prevention of water pollution.

## 3. Noise Pollution

- Noise pollution, also known as environmental noise, is the propagation of noise with harmful impact on the activity of human or animal life.
- The source of outdoor noise worldwide is mainly caused by machines, transport and transportation systems.

### Effects of Noise Pollution

- The effects of noise on hearing vary among people. But, any sound that is loud enough and lasts long enough can damage hearing and lead to hearing loss.
- A sound's loudness is measured in decibels.

### Ways to Prevent Noise Pollution

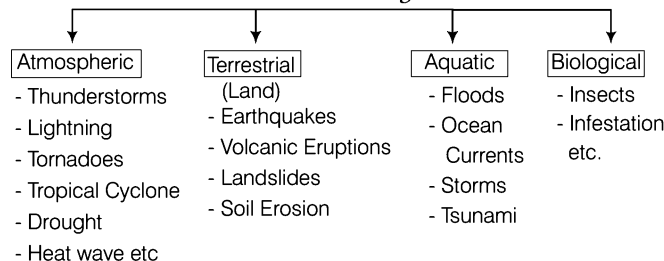
- Turn off appliances at home and office when not in use.
- Community law should check use of loudspeakers.
- Plant trees near roads to lessen vehicular noise.
- Use noise absorbents in noisy machineries.

## Natural Disasters

- Natural Hazards and Disasters are two different terms often used as one.
- **Natural Hazard** is a natural phenomenon resulting from forces that are largely outside human control, which might or might not affect human population. When human population is affected by it, it is termed as disaster.
- A disaster is a result of natural or man-made causes and results in serious disruption of life and property.

### Classification of Natural Disasters

Broadly, natural disasters can be classified under four categories as:



Name	Explanation	Causes	Effects	Management
1. <b>Earthquake</b>	<ul style="list-style-type: none"> <li>It is shaking of Earth surface because of release of energy in the Earth's crust. e.g. Nepal earthquake on 25th April, 2015</li> <li>Five Seismic Zones of Earthquake in India are— Zone- 1 (Very low risk), Zone- 2 (Low risk), Zone- 3 (Moderate risk), Zone-4 (High risk), Zone-5 (Very high risk)</li> </ul>	<ul style="list-style-type: none"> <li>Tectonic activity</li> <li>Volcanic eruption</li> <li>Rock fall</li> <li>Landslides</li> <li>Subsidence in mining areas.</li> </ul>	<ul style="list-style-type: none"> <li>Cracks on Earth surface</li> <li>Landslides</li> <li>Tsunami</li> <li>Collapse of infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Establishing earthquake monitoring centers.</li> <li>Preparing vulnerability map</li> <li>Community preparedness</li> <li>Construction should be according to standards</li> </ul>
2. <b>Tsunami</b>	Earthquakes and volcanic eruptions that cause the sea floor to move abruptly causing high vertical waves called Tsunami e.g. 2004 Tsunami in Indian ocean.	Earthquake and Volcanic eruption on ocean floor	<ul style="list-style-type: none"> <li>Destruction of houses and coastal structure vegetation</li> <li>Loss of life</li> </ul>	<ul style="list-style-type: none"> <li>Declaring Tsunami zones to prevent destruction</li> <li>Tsunami warning system should be installed to detect them in advance.</li> </ul>
3. <b>Cyclones</b>	They are violent storms, often of vast extent, characterised by strong and high winds rotating about a calm centre of low atmospheric pressure. originating over the sea. e.g. cyclone 'Vardah', 2016	Favourable conditions for generation of cyclones	<ul style="list-style-type: none"> <li>Loss of life and property, vegetation</li> <li>Conventional Rain</li> <li>Landslides</li> <li>Flooding</li> </ul>	<ul style="list-style-type: none"> <li>Mangrove plantation in coastal regions</li> <li>Hazard mapping and prediction of vulnerable areas</li> <li>Construction should be according to standards set for disasters.</li> </ul>
4. <b>Floods</b>	A flood is an overflow of water that submerges land which is usually dry e.g. Uttarakhand Disaster, 2013	<ul style="list-style-type: none"> <li>Heavy rainfall</li> <li>Sediment deposition</li> <li>Cyclone</li> <li>Tsunami</li> <li>Change in course of river</li> </ul>	<ul style="list-style-type: none"> <li>Loss of vegetation and sometimes settlements and life.</li> <li>Spread of diseases like cholera, water borne diseases.</li> </ul>	<ul style="list-style-type: none"> <li>Mapping of flood prone areas</li> <li>Land use control</li> <li>Early warning</li> <li>Flood control</li> <li>Response and recovery measure</li> </ul>
5. <b>Droughts</b>	It is either absence or deficiency of rainfall from its normal pattern in a region for an extended period. e.g: Bihar famine, 1966; Maharashtra Famine, 1970-73	<ul style="list-style-type: none"> <li>Lack of precipitation</li> <li>Shortage of water in area</li> <li>Dry climate with lack of rainfall</li> </ul>	<ul style="list-style-type: none"> <li>Salinisation of soil</li> <li>Groundwater decline</li> <li>Regional extinction of animal species</li> </ul>	<ul style="list-style-type: none"> <li>Drought monitoring</li> <li>Sowing drought resistant crops</li> <li>Rainwater harvesting</li> <li>Watershed Management</li> </ul>

Name	Explanation	Causes	Effects	Management
6. <b>Landslides</b>	It is the rapid sliding of large mass of bedrocks. e.g.: Uttarakhand Disaster, 2013	<ul style="list-style-type: none"> <li>• Heavy rain</li> <li>• Deforestation</li> <li>• Construction activities</li> <li>• Earthquakes and volcanic eruptions</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of life and property</li> <li>• Degrading environment of mountain areas.</li> <li>• Diversion of river course</li> <li>• Roadblocks, destruction of transport lines</li> </ul>	<ul style="list-style-type: none"> <li>• Area specific measures</li> <li>• Hazard mapping</li> <li>• Limiting construction on slope areas</li> <li>• Promoting afforestation</li> </ul>

## Man-Made Disasters

- Disasters can also be created by human actions including major accidents, deliberate or inadvertent actions of individuals or groups. For example, rail, road or air accidents are man-made disasters.
- Man-made disasters are disasters which occurred because of man, they can be industrial, nuclear or any other accident. The famous man-made disasters are
  - (i) Three Miles Tragedy (1979), London
  - (ii) Bhopal Gas Tragedy (1984), West Bengal, India
  - (iii) Chernobyl Nuclear Disaster (1986), Ukraine (USSR)
  - (iv) Fukushima Nuclear Disaster (2011), Japan
- All these disasters can only be managed with almost care, responsibility and prevention of use of anything which can cause these disasters.

# Practice Exercise

- What are the types of environmental pollution?
  - (a) Air pollution
  - (b) Noise pollution
  - (c) Water pollution
  - (d) All of these
- Contamination of air by pollutant is known as
  - (a) Air pollution
  - (b) Air contamination
  - (c) Acid rain
  - (d) All of these
- What are the natural causes of air pollution?
  - (a) Smoke
  - (b) Untreated waste
  - (c) Dust
  - (d) Both (a) and (c)
- What are the man-made causes of air pollution?
  - (a) Burning of fuels
  - (b) Deforestation
  - (c) Smoke from factories
  - (d) All of these
- The composition of smoke and fog is called
  - (a) Smog
  - (b) Haze
  - (c) Fog
  - (d) Mist
- What are the problems associated with smog?
  - (a) Breathing problem
  - (b) Fatigue
  - (c) Visibility problem
  - (d) Both (a) and (b)
- The acid rain is caused by
  - (a) Sulphur dioxide and Nitrogen oxide
  - (b) Carbon monoxide
  - (c) Carbon dioxide
  - (d) All of the above
- Which among the following is not a solution to deal with air pollution?
  - (a) Afforestation
  - (b) Using CNG Vehicles
  - (c) Soil erosion
  - (d) Using renewable sources

9. The things which pollute water are known as  
(a) Water pollutants (b) Slurry  
(c) Water waste (d) Sludge
10. What are the causes of water pollution?  
(a) Detergent in water  
(b) Open defecation  
(c) Industrial waste  
(d) All of the above
11. Which activities are responsible for water pollution?  
(a) Washing of clothes near source of water  
(b) Discharging industrial wastes  
(c) Both (a) and (b)  
(d) None of the above
12. Which amongst the following chemical is a water pollutant?  
(a) Fume (b) Copper  
(c) Iron (d) Arsenic
13. Harmful effects of water pollution include .....  
(a) Impure water  
(b) Acidity changes in water  
(c) Both (a) and (b)  
(d) None of the above
14. Which disease is caused by contaminated water?  
(a) Cholera (b) Rickets  
(c) Malaria (d) TB
15. 3 R's stand for  
(a) Reduce, Reuse, Recycle  
(b) Reduce, Replenish, Reuse  
(c) Remake, Reuse, Recycle  
(d) Reduce, Replenish, Recycle
16. Which chemical process can be used for treating water?  
(a) Oxidation (b) Chlorination  
(c) Solution (d) Desalinisation
17. Environmental noise is commonly known as  
(a) Environmental pollution  
(b) Noise pollution  
(c) Noise blast  
(d) Air pollution
18. Which disorder can be caused because of noise pollution?  
(a) Asthama (b) Sight loss  
(c) Hearing loss (d) Bone fracturing
19. Planting trees near roads is a good way for which type of pollution?  
(a) Air pollution (b) Noise pollution  
(c) Land degradation (d) Water pollution
20. What is the unit for measurement of sound's loudness?  
(a) Decibels (b) Newton  
(c) Joule (d) Watt
21. Which among the following is an atmospheric disaster?  
(a) Thunderstorm (b) Drought  
(c) Tornadoes (d) All of these
22. Earthquakes, volcanic eruption, landslides are the examples of  
(a) Aquatic disaster (b) Terrestrial disaster  
(c) Biological disaster (d) None of these
23. Which among the following is not a factor responsible for disasters?  
(a) Insects infestation (b) Tsunami  
(c) Earthquake (d) Deforestation
24. Man-made disasters consist of  
(a) Industrial disaster (b) Soil erosion  
(c) Floods (d) Landslides
25. Shaking of the Earth surface is called  
(a) Earthquake (b) Heat wave  
(c) Landslide (d) Plate tectonics
26. Which among the following is not an effect of earthquake?  
(a) Cracks on Earth surface  
(b) Tsunami  
(c) Landslide  
(d) Soil erosion
27. Which natural calamity is caused by earthquakes and volcanic eruption?  
(a) Tsunami (b) Droughts  
(c) Plate tectonics (d) Biodiversity loss
28. 2004 Tsunami occurred in  
(a) Indian ocean (b) Atlantic ocean  
(c) Pacific ocean (d) Arctic ocean

- 29.** Violent storms that originate over the sea and oceans are called  
 (a) Cyclones (b) Tornado  
 (c) Gusts (d) All of these
- 30.** Cyclone Vardha affected which part of India?  
 (a) Odisha coast  
 (b) Andaman and Nicobar  
 (c) Tamil Nadu coast  
 (d) Kerala coast
- 31.** Which type of plants are used as a shield against the cyclonic winds?  
 (a) Mangroves (b) Peepal tree  
 (c) Banyan tree (d) Eucalyptus tree
- 32.** Which among the following cause is not associated with floods?  
 (a) Heavy rainfall  
 (b) Change in course of river  
 (c) Sediment deposition  
 (d) Volcanic eruption
- 33.** Uttarakhand 'Flood' disaster took place in which year?  
 (a) 2013 (b) 2015  
 (c) 2014 (d) 2016
- 34.** What measures can be taken to ensure the control and prevention of floods?  
 (a) Land use control  
 (b) Mapping of flood prone areas  
 (c) Early warning system  
 (d) All of the above
- 35.** What are the effects of droughts?  
 (a) Salinisation of soil  
 (b) Regional extinction of animal species  
 (c) Groundwater decline  
 (d) All of the above
- 36.** Which among the following methods are not associated with drought management and control?  
 (a) Drought monitoring  
 (b) Watershed management  
 (c) Rainwater harvesting  
 (d) Mangrove plantation
- 37.** How many seismic zones are there in India?  
 (a) Five (b) Seven  
 (c) Four (d) Eight
- 38.** Bhopal Gas Tragedy took place in which year?  
 (a) 1984 (b) 1990  
 (c) 1989 (d) 1985
- 39.** Fukushima Nuclear Disaster (2011) took place at which place?  
 (a) Japan (b) China  
 (c) Australia (d) Korea
- 40.** Which among the following disaster took place in 1986 at Ukraine (USSR)?  
 (a) Three Miles Tragedy  
 (b) Minamata Accident  
 (c) Chernobyle Nuclear Disaster  
 (d) None of the above

## Answers

1.	(d)	2.	(a)	3.	(d)	4.	(d)	5.	(a)	6.	(d)	7.	(a)	8.	(c)	9.	(a)	10.	(d)
11.	(c)	12.	(d)	13.	(c)	14.	(a)	15.	(a)	16.	(b)	17.	(b)	18.	(c)	19.	(b)	20.	(a)
21.	(d)	22.	(b)	23.	(d)	24.	(a)	25.	(a)	26.	(d)	27.	(a)	28.	(a)	29.	(a)	30.	(b)
31.	(a)	32.	(d)	33.	(a)	34.	(d)	35.	(d)	36.	(d)	37.	(a)	38.	(a)	39.	(a)	40.	(c)