ENVIRONMENTAL COMMUNICATION
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SYLLABUS UNIT 3

ENVIRONMENTAL DISASTER AND MEDIA :

- *Environmental Pollution*: Definition, Causes, Effects and Control Measures of Air, Water, Soil, Marine, Noise, Thermal Pollution & Nuclear Hazards
- *Role of Govt* (NEMA, National Green Tribunal) and NGO's in Protecting Environment
- *Disaster Management:* Concept, Need & Importance; Role of NDMA
- *Media Intervention in Disaster management*

Environmental Pollution

DEFINITION:

- Environmental pollution is any addition of erroneous substances or energies to the environment, that causes a change to the composition of the environment. These variables can be air, water, soil, noise, and light and changes to their natural values can have profound consequences for ecosystems and human life.
- Environmental pollution is increasing day by day and imposing severe and irreversible damage to the world. It is of different types: air, water, soil, noise, light, etc.

Causes

- There are various causes of environmental pollution. Some of them are:

- **Burning of fossil fuels**: Fossil fuels are burnt as they act as a fuel for electricity generation, as well as for transportation purposes. When these fumes from vehicles get released into the atmosphere, they make the air impure. These fumes contain harmful gases like carbon monoxide and nitrogen oxides, which make the air toxic.
- **Agriculture**: Agricultural activities are another source of air pollution. Ammonia that comes from agricultural activities combines with air and forms aerosol. Aerosol is extremely harmful and causes lung and pulmonary diseases.
- **Wildfires**: Wildfires in forests also cause environmental pollution. Wildfires not only destroy the land, causing land pollution, but the smoke from the fire also causes air pollution.

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- **Construction or Demolition**: Demolition of buildings causes land pollution through the release of smoke.
- **Industrialisation**: Waste from industries causes both air and water pollution. Smoke from industries pollutes the air and is responsible for acid rains. The industrial wastes that are drained into water pollute the water as well and cause harm to aquatic life.
- **Mining**: Mining is another process that contributes to environmental pollution. It causes land pollution as well as contaminates the surface of the earth.
- **Microbial Decaying process** – Decaying of the microorganisms present in the surrounding releases methane gas which is highly toxic.
- **Volcanic eruptions-** volcanoes release enough sulphur dioxide into the air and influence global cooling.

Effects.

- **Effects of major air pollutants:**

- Gaseous pollutants produced in significant amounts adversely affect human health. Over billion tonnes of pollutants are released into the atmosphere from human activities. The most common and acute health problems caused by gaseous pollutants include bronchitis and congestion in the chest and wheezing. These effects can be reduced if the exposure to pollutants is reduced.

1. Sulphur dioxide – Sulphur dioxide is a major cause of lung diseases. It is responsible for irritation in the nose and mucus lining., shortness of breath, accumulation of fluids in tissues, oedema, and bronchospasm.
2. Oxides of nitrogen – Oxides of nitrogen released from the exhausts of buses, trucks and two wheelers cause irritation of eyes and lungs. Inhalation of these oxides in large amounts may lead to gum inflammation, internal bleeding, pneumonia and even cancer.
3. Carbon monoxide – It is known to be an extremely toxic gas. On entering the bloodstream, it completely inhibits the combining capacity of oxygen with haemoglobin. In fact, the affinity of carbon monoxide for blood is 240 times more than that of oxygen.

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➢ **Effects of radioactive pollution:**

- The impact of radiation on health depends on a number of factors such as the energy, types and amount of radiation, the age of the individual and the body part exposed. Ionising radiation may cause the following biological effects in human beings.

1. Carcinogenic effects – Ionizing radiation increases the probability of most forms of cancer.
2. Mutagenic effects – The genetic material changes due to mutagenic effects and the mutations get transferred to the offspring.
3. Teratogenic effects – The development of the embryo is affected and this results in birth defects.

It has been found that cells which undergo rapid division are more sensitive to radiation. The foetus is more sensitive to radiation and so are the children. Most of the studies on radiation have been conducted on animals.

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➢ **Effects of Water Pollution:**

- Chemical contaminants occur in drinking water throughout the water supply systems ranging from barely detectable amounts to levels that could possibly threaten human health. Determining the health effects of these contaminants is difficult, especially since researchers are still learning how chemicals react in the body to damage cells and cause illness.

- Toxic doses of chemicals cause either acute or chronic health effects. An acute effect usually follows a large dose of a chemical and occurs almost immediately. Examples of acute health effects are nausea, lung irritation, skin rash, vomiting, dizziness and even death.

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➢ **Soil pollution (Land degradation): Deforestation and Dumping of solid wastes**.

- Deforestation increases soil erosion; thus valuable agricultural land is lost. Solid wastes from household and industries also pollute land and enhance land degradation. Solid wastes include things from household waste and of industrial wastes. They include ash, glass, peelings of fruit and vegetables, paper, clothes, plastics, rubber, leather, brick, sand, metal, waste from cattle shed, night soil and cow dung. Chemicals discharged into air, such as compounds of sulfur and lead, eventually come to soil and pollute it. The heaps of solid waste destroy the natural beauty and surroundings become dirty. Pigs, dogs, rats, flies, mosquitoes visit the dumped waste and foul smell comes from the waste. The waste may block the flow of water in the drain, which then becomes the breeding place for mosquitoes. Mosquitoes are carriers of parasites of malaria and dengue. Consumption of polluted water causes many diseases, such as cholera, diarrhea and dysentery.

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- **Noise pollution** : High level noise is a disturbance to the human environment. Because of urbanization, noise in all areas in a city has increased considerably. One of the most pervasive sources of noise in our environment today is those associated with transportation. People reside adjacent to highways, are subjected to high level of noise produced by trucks and vehicles pass on the highways. Prolonged exposure to high level of noise is very much harmful to the health of mankind.

- In industry and in mines the main sources of noise pollution are blasting, movement of heavy earth moving machines, drilling, crusher and coal handling plants etc. The critical value for the development of hearing problems is at 80 decibels.
- Chronic exposure to noise may cause noise-induced hearing loss. High noise levels can contribute to cardiovascular effects. Moreover, noise can be a causal factor in workplace accidents.

Control Measures

- **Methods of controlling gaseous pollutants –**

1. Combustion – This technique is used when the pollutants are in the form of organic gases or vapours. During flame combustion or catalytic process, these organic pollutants are converted into water vapor and relatively less harmful products, such as CO2.

2. Absorption – In this technique, the gaseous effluents are passed through scrubbers or absorbers. These contain a suitable liquid absorbent, which removes or modifies one or more of the pollutants present in the gaseous effluents.

3. Adsorption – The gaseous effluents are passed through porous solid adsorbents kept in suitable containers. The organic and inorganic constituents of the effluent gases are trapped at the interface of the solid adsorbent by physical adsorbent.

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- **Water pollution prevention and control:**

1. Waste food material, paper, decaying vegetables and plastics should not be thrown into open drains.

2. Effluents from distilleries, and solid wastes containing organic matter should be sent to biogas plants for generation of energy.

3. Oil slicks should be skimmed off from the surface with suction device. Sawdust may be spread over oil slicks to absorb the oil components.

4. Sewage should be treated before it is discharged into the river or ocean.

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- **Prevention of soil erosion: Plants provide protective cover on the land and prevent soil erosion for the reasons:**

1. Plants slows down water as it flows over the land (runoff) and this allow much of the rain to soak into the ground
2. plant roots hold the soil in position and prevent it from being washed away
3. plants break the impact of a raindrop before it hits the soil, thus reducing its ability to erode
4. plants in wetlands and on the banks of rivers are of particular importance as they slow down the flow of the water and their roots bind the soil, thus preventing erosion.

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- **Effects of Marine Pollution**

- It happens when the marine system gets polluted with fertilizers and pesticides. After that, they integrate into the food chain and became part of the ecosystem which causes various harmful impacts on the living beings. These toxic pesticides create mutations and diseases in the marine food webs, which can endanger the entire food web and humans. It impacts biochemistry, the reproduction process, and tissue matter.

- **Steps to Prevent Marine Pollution**

- Stop using plastic & littering because these items clog drains and pollute the oceans.
- Ensure that the chemicals listed above are not utilized anywhere near streams of water, and attempt to reduce your use of them.
- Farmers must transition away from artificial fertilizers and pesticides and toward organic farming methods.
- Make use of public transportation and decrease your carbon footprint by taking simple but significant steps that will help reduce pollution in the environment and secure a healthy and safe future for future generations.

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What is Thermal Pollution?

- The term thermal pollution has been used to indicate the detrimental effects of heated effluent discharge by various power plants. It denotes the impairment of quality and deterioration of aquatic and terrestrial environment by various industrial plants like thermal, atomic, nuclear, coal-fired plants, oil field generators, factories, and mills.

- The following measures can be taken to prevent or control high temperature caused by thermal pollution:

1. Heated water from the industries can be treated by the installation of cooling ponds and cooling towers before discharging directly to the water bodies.
2. Industrial treated water can be recycled for domestic use or industrial heating.
3. Through artificial lakes: In this lake Industries can discharge their used or heated water at one end and water for cooling purposes may be withdrawn from the other end. The heat is eventually dissipated through evaporation.

Role of Govt.

- The Environmental Information (EI) Division implements the Environmental Information System (ENVIS) Scheme. The ENVIS serves as a single-stop web-enabled repository of comprehensive environmental information with collection, collation, storage, retrieval and dissemination of the same through a nationwide network of ENVIS Hubs(hosted by the Environment/ Forest Department of State Governments/ UT Administrations) and ENVIS Resource Partners(RPs) (hosted by environment related governmental and non-governmental organizations/institutes of professional excellence).
- EI Division handles the following areas of work related to the revamped ENVIS Scheme, after termination of the XIIth Five Year Plan:

1. To promote, implement and coordinate Green Skill Development Programme (GSDP), an initiative to skill youth in environment, forest and wildlife sectors and enabling them to be gainfully employed or self employed.
2. To support and promote research, development and innovation in ESIM.
3. To build a strong statistical base such that ENVIS is recognised as a South Asian Hub for ESIM.
4. To promote national cooperation and liaise with agencies concerned for exchange of environment related information.

Responsibilities

1. To promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution.
2. To improve the quality of air and to prevent, control or abate air pollution in the country
3. Advise the Central Government on any matter concerning prevention and control of water and air pollution and improvement of the quality of air
4. Plan and cause to be executed a nation-wide programme for the prevention, control or abatement of water and air pollution
5. Coordinate the activities of the State Boards and resolve disputes among them
6. Provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water and air pollution, and for their prevention, control abatement
7. Plan and organize training of persons engaged in programmes for prevention, control or abatement of water and air pollution
8. Organize through mass media, a comprehensive mass awareness programme on prevention, control or abatement of water and air pollution

Disaster Management

What is a Disaster?

A disaster is defined as a disruption on a massive scale, either natural or man-made, occurring in short or long periods. Disasters can lead to human, material, economic or environmental hardships, which can be beyond the bearable capacity of the affected society.

What is Disaster Management?

The Disaster Management Act of 2005 defines Disaster Management as an integrated process of planning, organizing, coordinating and implementing measures which are necessary for-

- Prevention of threat of any disaster
- Reduction of risk of any disaster or its consequences
- Readiness to deal with any disaster
- Promptness in dealing with a disaster
- Assessing the severity of the effects of any disaster
- Rescue and relief
- Rehabilitation and Reconstruction

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Agencies involved in Disaster Management

National Disaster Management Authority (NDMA):- The National Disaster Management Authority, or the NDMA, is an apex body for disaster management, headed by the Prime Minister of India. It is responsible for the supervision, direction, and control of the National Disaster Response Force (NDRF).

1. **National Executive Committee (NEC):-** The NEC is composed of high profile ministerial members from the government of India that include the Union Home Secretary as Chairperson, and the Secretaries to the Government of India (GoI)like Ministries/Departments of Agriculture, Atomic Energy, Defence, Drinking Water Supply, Environment and Forests, etc. The NEC prepares the National Plan for Disaster Management as per the National Policy on Disaster Management.
2. **State Disaster Management Authority (SDMA):-** The Chief Minister of the respective state is the head of the SDMA. The State Government has a State Executive Committee (SEC) which assists the State Disaster Management Authority (SDMA) on Disaster Management.
3. **District Disaster Management Authority (DDMA):-** The DDMA is headed by the District Collector, Deputy Commissioner or District Magistrate depending on the situation, with the elected representatives of the local authority as the Co-Chairperson. The DDMA ensures that the guidelines framed by the NDMA and the SDMA are followed by all the departments of the State Government at the District level and the local authorities in the District.
4. **Local Authorities:-** Local authorities would include Panchayati Raj Institutions (PRI), Municipalities, District and Cantonment 11 Institutional and Legal Arrangements Boards, and Town Planning Authorities which control and manage civic services.

Importance of DM

- Millions of people are affected by disasters each year. Effective disaster management is essential to reduce suffering and support those affected.

1. **Saves Lives-** During disasters, a crisis is an acute event that is fast moving and changing. Therefore, effective emergency planning and response is vital. A lack of coordination and response to disasters can have serious and long-lasting impacts on a community and can also lead to more deaths. Disaster management can help to enhance the ability of emergency responders to save lives.
2. **Improves Community Resilience-** When disaster strikes, response teams have the unenviable task of trying to help people in extreme conditions. The task can be extremely tough as an unprepared and untrained response team will have limited knowledge of the people they are working with. However, training helps to improve the effectiveness of a disaster management response team. Having the skills needed to help people in extreme conditions is one of the key elements of disaster management training.
3. **Promotes Disease Prevention-** Disasters cause an enormous number of deaths. However, they also create an additional health risk to those affected. People affected by disasters are frequently exposed to a range of illnesses which can cause further death. Communicable diseases, such as malaria, are much more likely to occur during and after a disaster because a lack of healthcare facilities, clean water, food and proper hygiene is common. Through disaster management practices, communities can improve their health and mitigate the impact of disasters.

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- **Reduces Poverty-** A natural disaster can have devastating effects on a community. It can push people into poverty and change the lives of entire communities. A lack of planning prior to a disaster can leave people without basic emergency supplies like food, water, clothing or medicine. By better preparing for disasters, communities can mitigate the threat of poverty, hunger and disease.
- **Improves Health-** Disasters, along with their aftermaths, can have a negative effect on a community's health. Disasters, along with lack of health services and clean water can lead to increased sickness, lack of immunity and a higher risk of infection. Therefore, it is essential that communities have access to health professionals, have a good supply of water and adequate sanitation facilities, and have access to emergency medical care during and after a disaster.
- **Reshapes Communities-** Disasters can have a huge impact on the local economy. A disaster can also impact the social fabric of a community. In this way, disaster management can help communities rebuild their communities and reconnect people with each other
- **Strengthens Security-** Terrorist groups exploit disasters to cause further bloodshed and chaos. The causes and consequences of disasters can act as a magnet for people with bad intentions to commit acts of terrorism. There are some social conditions which make terrorist activities more likely in certain areas. Examples include poor governance, overcrowding and high levels of poverty. After a disaster, communities must be vigilant in the protection of their security.

Media Intervention in DM

- Media - print, voice or visual - is an organized means of reaching a large number of people, quickly, effectively and efficiently. The suggestive, informative and analytical role of the media must form a key component of disaster education. It is the most potent way of educating the community on disaster prevention, mitigation and rehabilitation. These tasks can be carried out on the basis of the dual role of media related with imparting information and analysing disasters discerningly. The effects of disasters need to be examined not only in technical mind scientific terms, but also in humanitarian, social and economic terms.
- Media need to be proactive in nature rather than reactive. They need to disseminate the right information at the appropriate time. For instance in India, the reach of radio and television to the masses, in providing information is getting organized. However, there is a need to include professionals in these channels to enable easy comprehension and response to the information. For instance, the involvement of professional meteorologists or training of media experts in providing weather-related. Information would definitely make an impact on how meteorological information is presented.

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- Media can be extremely effective in the following areas:

1. **Educational:** Before a disaster, educating people about the hazard, prevention and self-help during the disaster. During rehabilitation, media can be extremely helpful in providing, accurate and unbiased coverage, post disaster impacts and needs.
2. **Guiding:** Guiding people in preparing resource disaster calendar, resource mapping and preparation of community contingency plan.
3. **Critical**: By critically evaluating the emergency plan and benefit to be transferred to the people. This may include review and improvement of any existing plan.
4. **Suggestive:** Media can suggest long term suggestions in the form of structured measure like enactment of certain legislation, adoption of code of conduct etc.