

Distance Learning Programme

UPPCS Mains

Environment & Disaster Management



O drishti ENVIRONMENT & DISASTER BISASTER MANAGEMENT

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	ion Assessment



- Notify major accidents to concerned authorities.
- Isolated storage: Account mentioned in Schedule 2 of hazardous waste.
- Written reporting, preparation of safety reports/updating such reports and Preparation of on-site Emergency Plan.
- Preparation of Off Site Emergency Plan responsibility of chief inspector of factories.
- Import of Hazardous Chemicals: Person responsible for import of hazardous chemicals shall inform the details of recipient port of entry, mode of transport quantity and product safety information. He shall abide by safety communicated.

Biomedical Waste Rules, 1998 (As Amended)

- The rules relate to safe handling and management of biomedical waste being generated from hospitals, nursing homes, research institutions, etc. standards for treatment and disposal has been laid down.
- Each occupier of a facility handling these wastes must obtain authorization of the State Pollution Control Board and follow the provisions of the rules. Time schedule for installation of treatment facilities have to be followed.

State of Pollution in Uttar Pradesh

Air Pollution

- In 2017, Uttar Pradesh recorded the most deaths attributable to air pollution, with 260,028 lives lost. Adding to the problem is household air pollution, particularly deadly in less developed states like Uttar Pradesh, Bihar, Madhya Pradesh, and Rajasthan.
- Though the government launched the Pradhan Mantri Ujjwala Yojana scheme in 2016 to discourage the use of polluting cooking fuels, household air pollution claimed the lives of an estimated 481,738 Indians in 2017, according to the Lancet study.
- According to report released by Climate Agenda that prepared the report 'Air Kills' and which was released in March 2018, "Air pollution is not limited to urban areas. As a result of limiting our efforts to cities only, places like Gorakhpur and Mau have become more polluted than cities like Delhi and Lucknow.
- Garbage burning and heavy diesel consumption are polluting the environment in Uttar Pradesh. Diesel gensets, uncontrolled construction activities, dusty roads, chemical fertilisers and pesticides used in agriculture are increasing pollution.
- The report was based on the air quality data of 14 districts Ballia, Mau, Ghaziabad, Azamgarh, Kanpur, Varanasi, Gorakhpur, Sonbhadra, Allahabad, Mirzapur, Agra, Lucknow, Noida, Moradabad and Shamli.
- According to the latest report released by the World Health Organization, Lucknow is one of the most polluted cities in India. Moreover, 14 of the world's 15 most polluted cities are in India, with Kanpur topping the list of 4300 places.
- In 2011, the CPCB released a National summary report on "Air Quality Monitoring, Emission Inventory and Source Apportionment Study" based on monitoring data from six cities (Delhi, Mumbai, Kanpur, Pune, Chennai and Bangalore). According to the report, in Delhi and Kanpur, the monitoring data at almost all locations and in all seasons were higher than the prescribed standards.

- **Reasons for Pollution in Kanpur:** Among the major causes of air pollution in Kanpur are industrial sector, vehicles, road dust and domestic cooking. The industrial sector is the biggest cause of air pollution in Kanpur (out of all the six cities). Kanpur is one of the largest industrial towns in North India, on the Indo-Gangetic plains, and the largest city in the state of Uttar Pradesh, with an urban population of over 3.5 million. Kanpur supports the largest textile and leather processing sectors in the region. Kanpur briefly attempted to put in place a public-private partnership system for the management of its solid waste. Initially the project seemed to function for about 4 years before the differences between the government and the private company led to a breakdown of the arrangement, leading to one of the major causes of air, water, and solid waste management issues in the city.
- **Reasons for Pollution in Lucknow:** Lucknow is the capital city of the Indian state of Uttar Pradesh, which has a population of 2.82 million (Municipal Corporation and Cantonment) as per the census held in 2011. The study aimed at assessing the rate of air pollution in Lucknow with the focus on the Particulate Matter 10, Particulate Matter 2.5, Sulphur Dioxideonnd Nitrogen Dioxide as these gases are a major source of air pollution. The Uttar Pradesh Pollution Board monitors the level of major source particular pollutants in the atmosphere. The study also reveals the major cause of air pollution and studies the tracking mechanisms which have been set up; lack of equipment and the reason behind the same, with some focus on the initiatives for awareness. The prime reasons are: Vehicular emissions and increasing private vehicles on the road, rapid urbanization at the expense of greenery, industries surrounding Lucknow, burning wood for fuel purposes, burning of the garbage etc.

The Air (Prevention & Control of Pollution) Act, 1981

This is an Act to provide for the prevention, control and abatement of air pollution in the country so as to preserve the quality of air. Central and State Boards constituted under section 3 and 4 of the Water (Prevention and Control Pollution) Act, 1974 were deemed also as Central and State Boards for Prevention and Control of Air Pollution.

Features of the act are:

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- U/S 19 of the Act, the state government in consultation with SPCB is vested with power to declare Air Pollution Control Area in which provisions of the Act shall be applicable. Presently, entire Uttar Pradesh has been declared pollution control area.
- As per the provisions in Sec. 21 (1) & (2), no person can establish or operate any industrial plant without the previous consent of the State Pollution Control Board.
- U/S 22, 22 (A) operating any industrial plant so as to cause emission of any air pollutant in excess of the standard laid down by the State Board is liable for litigation by the board.

Powers of State Board

Besides providing consultation to State Government for declaring or restricting an area as an Air Pollution Control Area, the State Board is vested with following powers:

Power of Entry and Inspection: Any person empowered by the State Board shall have right to enter the industrial premises for determining the status of pollution control equipment or otherwise necessary for compliance of the Act, and the person concerned



of the industry shall be bound to render assistance as deemed necessary for ensuring measures, and carrying out functions laid down in the Act. [U/S 24]

- Power to Take Samples: State Board or any person empowered by it shall have power to take samples of air or emission from any chimney, flue or any duct or any other outlet in such manner as may be prescribed. [U/S 26]
- Power to Give Direction: State Board may issue any direction to any person, authority, including closure, prohibition or regulation of any industry, and can also issue directives for the stoppage or regulation of supply of electricity, water or any other services. The direction should however be preceded by proposed directive in writing, giving an opportunity of being heard unless grave injury to the environment is likely, in which proposed directive may be avoided. [U/S 31 A]

Uttar Pradesh Pollution Control Board

- Uttar Pradesh Pollution Control Board is a statutory organization entrusted to implement Environmental Laws and rules within the jurisdiction of the state of Uttar Pradesh, India. Uttar Pradesh Water Pollution Prevention and Control Board, constituted on February 3, 1975, initially under the Water (Prevention and Control of Pollution) Act., 1974, was consequently rechristened as Uttar Pradesh Pollution Control Board on 13th July, 1982, subsequent to the enactment of the Air (Prevention and Control of Pollution) Act, 1981.
- The Board was also entrusted with the powers and functions under the Water (Prevention and Control of Pollution) Cess Act, 1977 along with other responsibilities under the Environmental Protection Act, 1986.
- The principal functions of the Board, as spelt out in the Water Act, 1974 and Air Act, 1981 is the prevention, control and abatement of water and air pollution. The main effort of the board is to assist the industries and entrepreneurs to discharge their daily basic obligations to safeguard the environment.
- The Water and Air Quality monitoring is an important part of the Environmental Management. It also provides the background data needed for industrial siting and town planning. The Board is regularly monitoring the quality of the major surface water bodies at 34 places and ambient air quality at 19 places in the state.
- Uttar Pradesh Pollution Control Board functions through its 25 Regional Offices spread all over the state along with its Head Office at Lucknow.

Water Pollution

- According to a CAG report, the water quality of major rivers and water bodies in Uttar Pradesh is not as per the norms and the main reason for this is inadequate sewage and industrial effluent treatment facilities in the state.
- The report stated that, the Uttar Pradesh Pollution Control Board failed to take appropriate action against the defaulters like municipal authorities and industries. UPPCB monitors the pollution level in rivers and water bodies of the state by collecting samples once every month and the audit analysed the reports of 12 major rivers and six water bodies.
- The BOD (bio-chemical oxygen demand) level and total coliform (which included bacteria that are found in the soil in water that has been influenced by surface water and in human or animal waste) are above the prescribed standard in 12 major rivers and six water bodies for the years 2013-15.

- The BOD and total coliform levels in Kali and Hindon exceeded the permissible limits, the report added that a major source of pollution in the Ganga River was discharge of untreated or partially treated sewage, open drains carrying sewage and industrial waste. The audit also found that the water quality in the river was not healthy.
- The water quality of Gomti was also not within the prescribed standards and the main reason for pollution in the river was sewage generation in Lucknow being much higher than the total capacity of the two STPs (Sewage Treatment Plants).
- In an assessment submitted by CPCB to NGT, it said that large amounts of industrial effluents have been found in the groundwater and rivers flowing through several districts of Uttar Pradesh.
- As per an analysis report of some rivers, including Hindon, enormous quantities of harmful substances including municipal and industrial effluents entering Hindon from the districts of Saharanpur, Muzzafarnagar, Shamli, Meerut, Baghpat, Ghaziabad and Gautam Budh Nagar, were found, which caused ground water contamination.
- The report said the water does not meet the prescribed standard of Primary Water Quality Criteria for Bathing Water as per Environment Protection Rules 1986.
- The averments in the petition relate to the contamination of ground water in the districts of Muzzafarnagar, Shamli, Meerut, Baghpat, Ghaziabad and Saharanpur and having an adverse health impact on the natives of the villages in these districts. The CPCB recommended stoppage of untreated wastewater being discharged into the river system or water bodies to prevent ground water from getting contaminated.

Ground Water Status: An Overview

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- The state of Uttar Pradesh, covering an area of 2,40,928 sq.km., lies in the vast Gangetic plain. It is a south easterly sloping flat terrain with a gentle, variable land slope, steeper in the western part and flattening eastward. Southern part is characterised by rugged topography with rocky terrain. The river Ganga is the major drainage with Yamuna, Ram Ganga, Gomti and Ghagra as its main tributaries.
- The state is characterised by subtropical climate. Average annual rainfall is around 947 mm varying in different areas, with 85% rainfall occurring during the monsoon period. The rainfall is the highest in northern and eastern parts of the state which gradually decrease towards west and south west.
- The state comprises of two major geomorphic units (i) Ganga plains (ii) Bundelkhand plateau.
- The Ganga plain covers nearly 85% area and is underlain by a thick pile of unconsolidated alluvial sediments of Quaternary age overlying the Precambrian basement. These sediments consist of sand of different grades with clay, silt and occasional gravel and kankar. The alluvium constitutes a very rich reservoir of ground water. The exploratory bore well data have been shown that ground water occurs in a multiple aquifer system which can broadly be divided into four groups. The shallow aquifer is being extensively exploited and hence, is under heavy stress. In the Bundelkhand rocky terrain, ground water movement is controlled by fractures, joints, faults and it occurs in localised pockets within weathered mantle. Ground water in the alluvial region of the state occurs in abundance which has led to extensive exploitation in certain parts of the state. The monitoring of hydrological regime is, therefore, of utmost importance for a scientific and planned management of the resource.
- Ground Water Department, Uttar Pradesh has been monitoring the ground water regime since 1975 and has generated a vast database to understand the behaviour of water level in response to recharge to ground water storage or withdrawal from it.

- The state is a largest user of ground water resources with a gross withdrawal of 5.28 mham. Region wise the maximum withdrawal (ground water draft) is from the western region covering 30 districts, i.e., 2.15 mham with minimum withdrawal from Bundelkhand region i.e. 0.23 mham.
- Studies reveal that 659 blocks are affected by ground water level decline. 179 blocks from 43 districts are categorised as stressed (Over-exploited/Critical). Almost all prominent urban centres like Lucknow, Kanpur, Meerut, Ghaziabad, Agra, Noida and Varanasi are severely affected by ground water depletion.
- Ground water quality is another area of concern for the Uttar Pradesh, as contamination in ground water in high concentration of fluoride, iron, arsenic, chromium, manganese and also the salinity is reported from various areas.

The Water (Prevention & Control of Pollution) Act, 1974

- This Act was enacted for the prevention and control of water pollution and maintaining or restoring of wholesomeness of water. The Central and State Pollution Control Boards have been constituted under section 3 and 4 of the Act respectively.
- The Act was amended in 1978 and 1988 to clarify certain ambiguities and to vest more powers in Pollution Control Board. Salient items and obligations on the part of industries and local bodies are:
 - To obtain prior consent to establish industry for new discharge. This is mandatory for every industry/local body discharging any domestic sewage or trade effluent into water, stream, well sewer or on land. For this purpose consent application has to be filed with the State Pollution Control Board (SPCB) in all respects along with the prescribed consent fee.
 - It is obligatory to provide additional information sought by the State Board. On receipt of application, the State Board may grant the consent with specific conditions and date of validity or refuse the consent for reasons to be recorded in writing.
 - Similar provisions of application and grant of consent exist for industries discharging the trade/effluent waste prior to enactment of the Act.

Power of State Board

- **To Obtain Information:** On construction, installation or disposal system if it has any relevance to the prevention or control of pollution.
- Carry Out any Related Work: If any industry fails to take up the same despite giving specific time bound notice by the State Board, for execution of such work any expenses incurred along with interest may be recovered from such person or industry as arrears of land revenue.
- Collect and Analyse Samples of Streams/wells or trade effluent.
- To Give Directions: State Board has power to give directions to any person/officer or authority, who will be bound to comply with the directions. The direction may include direction for the closure/prohibition or regulation of any industrial operation or process or stoppage/regulation of services like electricity, water etc.

Solid Waste Manageme<mark>nt</mark>

Solid waste management is the collecting, treating, and disposing of solid material that is discarded. Solid waste management should be embraced by each and every household,

including the business owners across the world. One of the negative effects of industrialization is the creation of solid waste.

Municipal Solid Waste Management (MSWM) is a key concern for the developing countries to facilitate optimal utilization of natural resources. Most of the MSW is disposed unscientifically in India.

The Municipal Solid Wastes (Management and Handling) Rules 2000, prescribed under the Environment Protection Act 1986 by the Government of India define municipal waste as "which includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes."

Municipal solid waste consists of household waste, construction and demolition debris, sanitation residue, and waste from the streets. This garbage is generated mainly from residential and commercial complexes.

Facilities for effective collection, transportation and disposal of MSW are low in Uttar Pradesh, e.g., in Lucknow estimates of uncollected wastes vary from 50% (Department of Urban Development, Uttar Pradesh) to 33%. Uttar Pradesh towns and cities on an average have one waste management staff per 668 inhabitants and since, the level of mechanization is very low, this ratio is grossly inadequate to effectively manage the MSW.

Solid Waste Managemen<mark>t Scenario in Class-I Citie</mark>s of Uttar Pradesh

- **Composition:** The biodegradable content of solid waste is much higher. Proportion of ash and fine earth is also high in Indian MSW due to construction and demolition, drain silt and street sweeping which is gradually reducing due to continuous cementation.
- Albeit, the legislative framework have been also constructed to strengthen the MSWM in India. Series of MSW environmental legislation also depicts its importance in the sustainability framework. It includes 74th amendment to the constitution [12th schedule, function number 6], the Uttar Pradesh 'Municipal Corporation Act of 1959', Uttar Pradesh 'Plastic & other non-biode gradable garbage ordinance' of July 2000, Municipal waste [Management & Handling] Rules 2000, Ministry of Urban Development issued manual on MSWM.
- In addition, as part of the National Environment Policy 2006, the action plan for soil pollution comprises strengthening the capacities of Urban Local Bodies (ULB) for segregation, recycling, and reuse of municipal solid wastes, and setting up and operating sanitary landfills, in particular through competitive outsourcing of SWM services.
- Collection and Transport Poor collection efficiency is attributed to a shortfall in manpower, containers and transportation facilities. Transportation of solid waste continues to be perceived as risky and is associated with negative externalities that affect the quality of life including truck, traffic, odours and stigma. Containers are often placed in inappropriate locations where collection vehicles cannot access them frequently and unlidded or left open.
- The treatment waste component is separated manually at source by the generators and rag-pickers after the waste has been dumped. Some degree of pre-treatment, which includes the separation of contaminating materials from waste, is done at composting plants prior to composting. However, no large-scale materials recovery facility for mechanized separation of waste has been setup in India.

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Existing Status of Solid Waste Management in Uttar Pradesh

- There are 630 urban local bodies (Nagar Nigam-13, Nagar Palika Parishad-196, Nagar Panchayat-421) identified in the State of Uttar Pradesh. Out of 13 Nagar Nigam, MSW treatment and disposal facilities (MSWTSDF) have been installed in 8 Nagar Nigams, namely Kanpur, Agra, Lucknow, Moradabad, Aligarh, Varanasi, Allahabad and Bareilly.
- Existing facility for waste processing and disposal in respect of Waste processing and disposal, 16 MSW treatment and disposal sites have been constructed and is operational in Uttar Pradesh while 3 MSW treatment disposal sites are under construction. Disposal of municipal solid waste is done by composting, bio-composting, vermi-composting, palletisation/composting, land filling etc.
- In these 16 MSW treatment and disposal facilities, 03 sites are based on composting process, 01 site is based on composting/landfilling/recycling/briquette making, 05 sites are based on bio-composting/landfill, 01 site bio-composting/RDF process, 04 sites on palletisation/composting and 02 sites are operational on the basis of vermicomposting process etc.

Focus Point of the State on SWM

- Environment friendly and scientific solid waste management in each ULB.
- Planning will be made to convert waste into energy.
- Advance and scientific STP plant will be established nearby slaughter houses and leather industries, in towns along the Ganga, (recently in Varanasi an advanced Sewage Treatment Plant (STP) has been inaugurated), Yamuna and its tributaries so that treated water goes into the river.
- Under Swachh Bharat Mission, Solid Waste Management component 35% grant will be given from Government of India and 40% from state Nigam and in case of Nagar Palika Parishad grant is government.

Draft Policy of Uttar Pradesh on Solid Waste Management

Goal & Objectives of the Policy: The overall goal of this Policy is therefore to ensure that: "The system for managing solid wastes is financially and environmentally sustainable, and contributes to improved quality of life."

The primary objectives of this policy are:

- Achieve high standards of cleanliness in the towns and cities of Uttar Pradesh for achieving healthy, hygienic and livable environment.
- Implementing waste hierarchy-3R's, Reduce, Reuse, Recycle.
- The Policy for managing solid wastes is developed to facilitate preparation, implementation and operation of a decentralized/integrated and cost-effective Solid Waste Management System in the state with adequate revenue flow from SWM fee and other sources.
- Available data and information on the sources, nature, quantities and fate of wastes, and SWM facilities, is sufficiently comprehensive and reliable to be able to regulate and manage wastes effectively helping in waste prevention, recovery and recycling.
- Stakeholders, institutional and organisational arrangements must have a sufficient awareness and understanding of their roles, duties and responsibilities in achieving an optimal for the development and operation of a decentralized/integrated and cost effective solid waste management system.

