

UNIT – 9

POPULATION STATUS IN BIHAR-AIR/WATER

Lesson Structure

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9.0 Objective:

The basic objective of this unit is to provide comprehensive information to students about the Air pollution, Water pollution specially in Bihar. Furthermore, students will also be able to know about the present pollution status of Bihar.

9•1 Introduction :

Major pollution world over may be described in terms of Air pollution, Water pollution, Noise pollution, Soil/land pollution and Nuclear pollution. This ultimately may contribute to several adverse atmospheric and environmental effects such as Acid rain, Ozone depletion, Global warming, Climate Change and Green house effects. They may ultimately cause degradation of biodiversity, ecology, seasons and ecosystem.

According to Bureau of Indian Standards, Air Pollution is the presence in the ambient air/ atmosphere of substances generally resulting from the activities of man, in sufficient concentration present for a sufficient time and under circumstances, which interfere significantly with the comfort, health or welfare of persons or with full use of enjoyment of property. The WHO defines air pollution as limited to situations in which outdoor ambient atmosphere contains material air concentrations which are harmful to man and his environment. In other words, air pollution is, “The presence of one or more contaminants in the atmosphere which are injurious to human beings, plants and animals or which reasonably obstruct the comfortable enjoyment of life and property”. Man inhales about 15 to 16kg of air and breathes 22,000 times in a day (BPCB, 2015).

In India there is a provision of National Ambient Air Quality Standards (NAAQS) having objectives such as indicating the levels of air quality necessary with an adequate margin of safety to

protect the public health, vegetation and property; assisting in establishing priorities for abatement and control of pollutant level; providing uniform yardstick for assessing air quality at national level; and indicating the need and extent of monitoring programme.

9.2 Air Pollution :

Air, which is a mixture of gases, moisture and some inert material, controls life on earth. It is a reservoir of oxygen needed by man and other animals and of carbon-dioxide essential for plants. Any contamination in air may disturb the whole atmospheric systems which is an insulating blanket around the earth. Without air there would be no clouds, no winds, no rain, no snow and no fire. In other words, there would be no life on earth.

High air pollution in Patna is posing a threat of not only respiratory trouble among the city residents but may also spawn cardiac problems. It is also likely to increase the mortality rate among heart disease patients.

According to a data of Bihar State Pollution Control Board (BSPCB), the air pollution situation in the city is really disturbing. The standard annual mean Respirable Suspended Particulate Matter (RSPM) of up to 60 micro gram per cubic meter is not harmful, but the RSPM mean is almost triple that level now in Patna.

The board's data reveals that the annual average of RSPM recorded in the year 2006-2007 was 117. The figure touched 122 in 2007-2008 and in the year 2011-2012, RSPM rate grew to 167 microgram per cubic meter. BSPCB's study on health hazard of air pollution also revealed that with long exposure to RSPM, a person may develop diseases like bronchitis and pulmonary emphysema and thus, consequently, corpulmonale.

A recent study correlating cardiac deaths and air pollution by the London school of Hygiene and Tropical medicine, the largest study of its kind, found that an increase in the volume of PM 2.5 particles by 10 micro meter per cubic meter of air raises the death rate among heart patients by 20%. Smoking increases the risk for heart diseases, but air pollution can prove to be a bigger threat. Smoking develop a disease called corpulmonale, and those in constant exposure to dust particles too may develop the disease. Corpulmonale is enlargement of the right ventricle of the heart as a response to increased resistance or high blood pressure in the lungs. There was increase in cases of the disease in Patna that may result in chronic obstructive lung disease (COLD) caused due to accumulation of pollutants in the lungs, the small blood vessels become very stiff and rigid. Many physicians have found a relationship between pollution, lung disorder and corpulmonale.

9.3 Water Pollution :

Water is an essential source for life on earth. We drink it, bathe in it, relax in it, fish in it, keep cool with it, irrigate the plants, produce energy with it and also use it for transportation and recreation.

Many ancient civilizations have developed in river valleys of the Nile, Indus, Tigris and Euphrates etc. even now also water resources provide a base for social, cultural and economic development. It seems that water is abundant, but usable water is very limited and creates a serious conservation problem in many places where it is needed. Apart from scarcity of water, we are also facing a problem of water pollution not only of rivers and lakes but also of underground water. The intolerable burden of chemical and human waste products have become a threat to aquatic life as well as to human health. Therefore, much attention has been given to study the various facets of water pollution, not only to understand the nature and effects of water pollution but also for its control.

According to the WHO, 900,000 Indian died each year from drinking contaminated water and breathing in polluted air.

Ensuring availability of safe drinking water for a large population always remained a most challenging occupation. Bihar in fact has been naturally gifted with a tremendous amount of underground water in almost every part of the state, excepting some hilly and hard to reach areas. The supply of underground water by Municipalities in different towns gets polluted due to leakages and mixing up with drainage water. The underground water level usually goes down in several parts, especially during summer the period consumption of water used to be maximum causing tremendous hardships to people. In several parts of Bihar, underground water is found to have some permanent impurities like arsenic, high iron and other impurities which are hazardous for health.

The arsenic and fluoride contamination of ground water along with poor sanitation facilities in the state of Bihar has become a major challenge in water supply in rural and urban areas. The arsenic contamination is confined within younger Alluvial Belt along the river Ganga. The affected areas are flood prone, geochemically representing reducing environment resulting in mobilization of arsenic in ground water.

The arsenic affected wells in particular and the contaminated aquifer in general are required to be avoided. Arsenic free deep aquifer with sufficient potential are required to be tapped for community water supply. However, care is required against leakage of contaminated water from the shallow aquifer down-wards due to the faulty construction of the wells. Surface water may be the long-term sustainable source for the villages along the River Ganga.

Several schemes have been launched in Bihar and several habitations covered by those schemes such as PWSS, Hand pumps/Bore wells and others were respectively 4632, 90312 and 12696. Testing of drinking water in 21744 habitations. Improved potable water supply and sanitation facilities and services are critical to enhance public health and improve human development outcomes, more so for rural households. Though the State of Bihar has recorded an impressive performance in providing safe drinking water to its rural households, further improvements are required in terms of quantity, quality, equity and sustainability.

The Bihar State Water and Sanitation Mission (BSWSM) shall have the over all goal to improve the quality of life of rural citizens by enhancing access to improved and sustainable water supply and sanitation facilities and services in rural areas. It's expected to act as an autonomous body for implementation of activities/projects relating to rural water supply, sanitation, solid and liquid waste management and hygiene.

The total sanitation compaign or TSC in Bihar has been launched to ensure sanitation facilities in rural areas with the broader goal to eradicate the practice of open defecation. TSC provided strong emphasis on key intervention areas such as Individual House Hold Latrines (IHHL), School Sanitation and Hygiene Education (SSHE), Community sanitary complex, Aanganwadi toilets supported by Rural Sanitary Marts (RSMs) and Production Central (PCs). Massive construction of toilets in different schools of Bihar under the National Swaksh Bharat Mission.

In Bihar there are almost over a dozen districts which are affected with arsenic however in districts like Buxar, Bhojpur, Patna and Bhagalpur it is found to have a level of 1-2mg per litre. It ranges between 0.1 to 1 mg per litre in district like Vaishali and Samastipur. The menace of arsenic in water is complemented due to agriculture, use of biomass and cow dung cakes for cooking. Earlier up to 1970, people were using ground water for drinking and now people rely more over ground water through handpumps. Arsenic is the key reason for liver cancer and other ailments in Bihar. Due to earth quakes arsenic mixing increases in rivers and underground water. There are iron contamination found in Bihar in different districts.

9.4 Summary :

In an ecosystem, all the elements act and react in an integrated form, therefore, this life supporting system continues in a systematic way. But when any disturbance is created by man even in a micro form, there is a case of pollution. Growing industrialization and transportation and the increasing use of pesticides and unwanted chemicals in the air and water has rendered the whole earth polluted and its impact is very dangerous, not only on man and other living organisms but also on environment itself.

9.5 Questions for Exercise :

1. What is Pollution ?
2. Discuss Air pollution status in Bihar
3. Discuss water pollution status in Bihar.

9.6 Suggested Readings :

1. Manivasakarm, N. – Environmental Pollution
2. Maxwell, K.E. – Environment of Life
3. Santra, S.C. – Environmental Science
4. Saxena, H.M. – Environmental Geography