

BLOCK 2
ENVIRONMENTAL POLLUTION CONTROL
LAWS IN INDIA

BLOCK 2 ENVIRONMENTAL POLLUTION CONTROL LAWS IN INDIA

Block 2 “Environmental Pollution Control Laws in India” deals with laws on air, water, industrial, bio-medical and solid waste pollution.

Unit 5 “Air and Water Pollution” deals with the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the National Water Quality Monitoring Programme (NWMP) and the National Air Quality Monitoring Programme (NWMP).

Unit 6 “Industrial and Noise Pollution” deals with the features of the Factories Act, 1948; the Motor Vehicles Act, 1988 and the Public Liability Insurance Act, 1991. The unit also delves into the provisions of the Noise pollution (Regulations and Control) Rules, 2000 and the Environmental Impact Assessment Notification, 2006.

Unit 7 “Bio-medical and Solid Waste Pollution” deals with the important provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, the Bio-Medical Waste (Management and Handling) Rules, 1998 and the Bio-medical Waste Management Rules, 2016 and the Solid Waste Management Rules, 2016.

Unit 8 “General Laws and Programmes for Environmental Protection” deals with the different laws and programmes for environmental protection.

Objectives

After studying this block, you will be able to:

- explain the features of the Water (Prevention and Control of Pollution) Act, 1974;
- explain the features of the Air (Prevention and Control of Pollution) Act, 1981;
- explain the functions of the Central Pollution Control Board and State Pollution Control Board;
- explain the features of the Factories Act, 1948;
- explain the features of the Motor Vehicles Act, 1988;
- explain the features of the Public Liability Insurance Act, 1991;
- discuss the noise pollution and the Noise pollution (Regulations and Control) Rules, 2000;
- explain the features of Environmental Impact Assessment Notification, 2006;
- explain the provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016;
- explain the provisions of the Bio-Medical Waste (Management and Handling) Rules, 1998 and the Bio-medical Waste Management Rules, 2016;
- explain the features of the Solid Waste Management Rules, 2016;
- discuss the laws and programmes for environmental protection; and
- explain plant quarantine and animal quarantine.

We hope that after studying this block, you will acquire an understanding of environmental pollution control laws in India.

Wishing you success in this endeavour!

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5.1 INTRODUCTION

Pollution is the fusion of contaminants into the environment that causes instability, harm or discomfort to the system. It is the undesirable change in physical, chemical and biological characteristics of our air, land and water. The pollution may be natural or manmade. Natural pollution is due to causes like dust, storm, forest fires, volcanic eruptions, water erosion, landslides, pollen grains, ultraviolet radiation etc. and man-made pollution is caused by human activities like industries, automobiles, sewage, runoff from crop fields, pesticides, noise, etc.

Pollutants are the constituents or factors, which harm the natural quality of any component of the environment. For example, smoke from industries and automobiles, chemicals from factories, radioactive substances from nuclear plants, sewage from houses and discarded household articles are common pollutants. According to the form in which they are present after release into the environment, the pollutants may be classified into primary and secondary

pollutants. Primary pollutants are present in the form in which they are added to the environment and they directly cause air pollution. Secondary pollutants are formed by interaction among the primary pollutants. For example, peroxyacetyl nitrate (PAN) is formed by the interaction of nitrogen oxides and hydrocarbons. According to their existence in nature, the pollutants may be classified into quantitative and qualitative pollutants. Quantitative pollutants occur in nature and become pollutants when their concentration reaches beyond a threshold level. e.g., carbon dioxide, and nitrogen oxide. Qualitative pollutants do not occur in nature and are man-made. e.g., fungicides, herbicides, DDT etc. According to their nature of decomposition, the pollutants may be classified into biodegradable and non-biodegradable pollutants. Biodegradable pollutants are degraded by microbial action. e.g., sewage. Non-biodegradable pollutants are not decomposed by microbial action. e.g., plastics, glass, DDT, salts of heavy metals, radioactive substances etc. According to the origin, the pollutants may be classified into natural and anthropogenic pollutants. Natural pollutants occur in nature. e.g., dust, storm, forest fires, volcanic eruptions, water erosion, landslides, pollen grains, and ultraviolet radiations. Anthropogenic pollutants occur due to human activities. e.g., industries, automobiles, sewage, runoff from crop fields, pesticides, noise etc. This unit will give you an overview of the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. Through this unit, we would be discussing the National Water Quality Monitoring Programme (NWMP) and National Air Quality Monitoring Programme (NAQP). Further, we will be discussing the air and water quality standards.

5.2 Objectives

After studying this unit, you should be able to:

- explain the features of the Water (Prevention and Control of Pollution) Act, 1974;
- explain the features of the Air (Prevention and Control of Pollution) Act, 1981;
- explain the National Water Quality Monitoring Programme (NWMP) and National Air Quality Monitoring Programme (NAQP);
- explain the functions of the Central Pollution Control Board and State Pollution Control Board; and
- describe the air and water quality standards.

5.3 AIR POLLUTION

Air pollution is defined as the condition in which the ambient atmosphere contains harmful materials in concentrations, which are noxious to man and his surrounding environment. It may be described as contamination of the atmosphere by pollutants, that can endanger human health and the welfare of plants and animals. Although some pollutants are released by natural

resources like volcanic eruptions and forest fires. The effect of this pollution is very small when compared to that caused by emissions from industrial sources, power and heat generation, waste disposal and the operation of internal combustion engines. Fuel combustion is the largest contributor to air pollution.

Various human activities, particularly industrial and transport activity have led to the emission of a variety of pollutants into the atmosphere. The adverse effect of air pollution appears in the form of poor quality of air, acidic precipitation and deposition, and health hazards.

5.3.1 Causes of Air Pollution

The causes of pollution are uncontrolled growth in human population and rapid industrialization, urbanization, uncontrolled exploitation of nature, forest fires, radioactivity, volcanic eruptions and strong winds, etc. The main sources of air pollution are emissions from industrial stacks, vehicles and power plants, burning of fuel in the domestic sector, construction and demolition, and burning of agricultural residues during the harvesting season.

Industrial Emissions

The industries have been categorized into three categories namely Red, Orange and Green by the pollution control board, according to their pollution potential. The Red category industries require environmental clearance from the Competent State Authority of the Department of Environment. Together these contribute to suspended particulates, oxides of nitrogen and sulfur, organic compounds and other pollutants in the air.

Table 5.1 Types of Air Polluting Industries

Name of Industry	Major Air Pollutants
Rice, Sugar, Food Products	Particulates, SO ₂ , NO _x
Beverages	Particulates, Odour
Cotton/Woolen/Synthetic/Textile/Dyeing	Particulates
Paper Products & Printing	Particulates, Mercaptans
Leather & Leather Products	Particulates, Odour
Rubber & Plastic Products	Particulates, Odour, VOCs
Chemical Products	Cl ₂ , HCl, Acid mist, Acid fumes, Hydrocarbons
Non-Metallic Mineral Products	Particulates
Metal Products	Particulates, CO, SO ₂ , Acid Mist
Transport Equipments & Parts	Particulates

Brick Kilns	Particulates, SO ₂ , CO
Pharmaceuticals	Odour, Particulates
Rolling, Forging & Galvanizing units	Particulates, SO ₂ , NO _x
Fertilizer, Vanaspati, Thermal, Cement	Odour, Particulates

Vehicular Emissions

Vehicular emissions are of particular concern since they have the maximum impact on the human population and other biotic components. The gases emitted from vehicles such as jeeps, trucks, cars, buses, etc. pollute the environment. These are the major sources of greenhouse gases and also result in diseases. The major pollutants released as vehicle emissions are carbon monoxide, nitrogen oxides, photochemical oxidants, air toxics namely benzene, aldehydes, 1-3 butadiene, lead, particulate matter, hydrocarbon, oxides of sulphur and polycyclic aromatic hydrocarbons.

While the predominant pollutants in petrol/gasoline-driven vehicles are hydrocarbons and carbon monoxide, the predominant pollutants from diesel-based vehicles are oxides of nitrogen and particulates. As per studies by Central Pollution Control Board, vehicular emissions are responsible for most hydrocarbons (90-95%) and carbon monoxide (70-80%) emissions.

Burning of Garbage and other Biomass

The garbage burning increases during the winter season as the general public tend to burn the waste for heating purposes. The smoke also impairs visibility which can cause road accidents. Further, due to high per capita income and the adoption of the modern lifestyle, the use of air conditioners and refrigerators is increasing rapidly. This contributes to air pollution by ozone-depleting substances.

Road Dust Emissions

Road dust emission is one of the major sources of air pollution. The pollution from road dust can be controlled with carpeting of roads, maintenance of potholes-free roads for free-flow of traffic, water sprinklers, mechanical sweeping of roads, creation of green buffers along the roadsides and water fountains at major traffic intersections, etc.

Construction & Demolition Activities

Infrastructure development has been growing with many major construction projects like housing, industrial units/commercial units etc. which contribute to pollution.

Emissions from Diesel Generator Sets

DG sets are one of the major sources of air pollution as well as noise pollution. These emit oxides of Nitrogen, Carbon monoxide and particulate

matter. These emissions are directly released into the atmosphere and tend to substantially reduce the quality of air. The emissions from diesel generators make it difficult for people living around to breathe. Standards have been laid by the government in terms of noise levels, emission levels and other guidelines for manufacturers and buyers.

Burning of Fossil Fuels

The combustion of [fossil fuels](#) emits a large amount of sulphur dioxide. Carbon monoxide released by incomplete combustion of fossil fuels also results in air pollution.

Agricultural Activities

Ammonia is one of the most hazardous gases emitted during agricultural activities. The insecticides, pesticides and fertilizers emit harmful chemicals into the atmosphere and contaminate it.

Factories and Industries

Factories and industries are the main sources of carbon monoxide, organic compounds, hydrocarbons and chemicals. These are released into the air, degrading its quality.

Mining Activities

In the mining process, the minerals below the earth are extracted using large pieces of equipment. The dust and chemicals released during the process not only pollute the air but also deteriorate the health of the workers and people living in the nearby areas.

Domestic Sources

The household cleaning products and paints contain toxic chemicals that are released into the air. The smell from the newly painted walls is the smell of the chemicals present in the paints. It not only pollutes the air but also affects breathing.

5.3.2 Effects of Air Pollution

Atmospheric pollution has serious health implications. When these pollutants occur in higher concentrations in the atmosphere, they result in a high general mortality rate in the concerned region. The hazardous effects of air pollution on the environment include:

Diseases

Air pollution has resulted in several respiratory disorders and heart diseases among humans. The cases of lung cancer have increased in the last few decades. People living near polluted areas are more prone to pneumonia and asthma.

Global Warming

Due to the emission of greenhouse gases, there is an imbalance in the gaseous composition of the air. This has led to an increase in the temperature of the earth. This increase in the earth's temperature is known as [global warming](#). This has resulted in the melting of glaciers and an increase in sea levels.

Acid Rain

The burning of fossil fuels releases harmful gases such as nitrogen oxides and sulphur oxides in the air. The water droplets combine with these pollutants, become acidic and fall as acid rain which damages human, animal and plant life.

Ozone Layer Depletion

The release of chlorofluorocarbons, halons, and hydro chlorofluorocarbons in the atmosphere is the major cause of the depletion of the ozone layer. The depleting ozone layer does not prevent the harmful ultraviolet rays coming from the sun and causes skin diseases and eye problems among individuals.

Effect on Animals

The air pollutants suspend in the water bodies affect aquatic life. Pollution also forces the animals to leave their habitat and shift to a new place. This led to the extinction of a large number of animal species.

Smog

It is air pollution that is a result of the interaction of sunlight with certain chemicals in the atmosphere. One of the primary components of photochemical smog is ozone. The ozone in the stratosphere protects the earth from harmful UV radiation and the ozone on the ground is hazardous to human health.

Ground-level ozone is formed when vehicle emissions containing nitrogen oxides (primarily from vehicle exhaust) and volatile organic compounds (from paints, solvents, printing inks, petroleum products, vehicles, etc.) interact in the presence of sunlight.

Smog refers to hazy air that causes difficult breathing conditions. It is a combination of various gases with water vapour and dust. Its occurrences are often linked to heavy traffic, high temperatures, and calm winds. During the winter, wind speeds are low and cause the smoke and fog to stagnate near the ground therefore the pollution levels increase near ground level. Ground-level ozone is formed through a complex reaction involving hydrocarbons, nitrogen oxides, and sunlight. It is formed when pollutants released from gasoline, diesel-powered vehicles and oil-based solvents react with heat and sunlight. The effects of smog are:

- It hampers visibility and harms the environment.
- Causes the respiratory problems
- Problems relating to bronchial diseases.
- Heavy smog greatly decreases ultraviolet radiation. It also results in a decrease in natural vitamin D production leading to a rise in the cases of rickets.

5.3.3 Air Pollution Control Measures

The following are the measures for controlling air pollution:

Minimize the Use of Vehicles

People should avoid using vehicles for shorter distances. Rather, they should prefer public modes of transport to travel from one place to another. This not only prevents pollution but also conserves energy.

Energy Conservation

A large number of fossil fuels are burnt to generate electricity. Switch off the electrical appliances when not in use to save the environment at the individual level. The use of energy-efficient devices such as CFLs also controls pollution to a greater level.

Use of Clean Energy Resources

The use of solar, wind and geothermal energies reduces air pollution. It is an important step towards a cleaner environment.

Other air pollution control measures include:

1. By minimizing and reducing the use of fire and fire products.
2. Since industrial emissions are one of the major causes of air pollution, the pollutants can be controlled or treated at the source itself to reduce their effects. For example, if the reactions of a certain raw material yield a pollutant, then the raw materials can be substituted with other less polluting materials.
3. Fuel substitution is another way of controlling air pollution. In many parts of India, petrol and diesel are being replaced by CNG – Compressed Natural Gas fueled vehicles.
4. The industries can modify and maintain existing equipment so that the emission of pollutants is minimized.
5. In some cases, controlling pollutants at the source is not possible. In that case, the process control equipment to control the pollution can be used.
6. A very effective way of controlling air pollution is by diluting the air pollutants.
7. The plantation of trees reduces the large number of pollutants in the air.

Control of Industrial Emissions

- Conversion of the industry to CNG/PNG from coal, furnace oil & pet coke.
- Conversion of natural draft brick kilns to induced draft.
- Demonstration of cost-effective energy efficient & cleaner technologies.
- Capacity building on better fuel preparation & firing practices.
- Action against non-complying industrial units.

Control of Vehicular Emissions

- Extensive drive against polluting vehicles.
- Remote sensor-based PUC system.
- Promotion of E- vehicles.
- Promotion of CNG & biofuels.
- Introduce intelligent traffic systems.
- Check fuel adulteration.

Burning of Garbage, Agriculture & other Biomass

- Construction of composting pits in different parks for collection of horticulture waste to avoid burning of biomass in the city.
- Burning of municipal solid wastes stands prohibited.
- Awareness among MC staff/Safai Sewak should be created.
- Create awareness among farmers regarding the health effects of residue burning.
- Identification of several fire incidents during harvesting season.
- Demonstration & dissemination of technology for in-situ and ex-situ utilization of agriculture residue.

Control of Road Dust Emissions

- Maintain potholes-free roads for free flow of traffic.
- Mechanical sweeping and water sprinkling of roads.
- Creation of green buffers along the roadsides.
- Greening of parks, open areas, community places, schools and housing societies.
- Water fountains at major traffic intersections.

Control of Construction & Demolition Activity

- Enforcement of Construction & Demolition Rules.
- Ensure carriage of construction material in closed/covered vehicles.

Control of Emissions from other measures

- Dissemination of information on Air Quality Index.

- Monitoring of DG sets and action against the violation.

Mitigation Measures for Controlling Air Pollution

- Conserve energy - at home, at work, everywhere.
- Look for the 'energy star' label when buying a home or office equipment.
- Carpool, use public transportation, bike, or walk whenever possible.
- Use of clean fuels like CNG and regular maintenance and checkup of vehicles.
- Mulch or compost leaves and yard waste.
- Avoid burning leaves, trash, and other materials.
- Install energy-efficient equipment in the industry.

Air Quality Related Standards

- [National Ambient Air Quality Standards](#)
- [Vehicular Exhaust](#)
- [Bio-Medical Incineration](#)
- [Auto Fuel Quality](#)
- [Common Hazardous Waste Incinerators](#)
- Generator Set [Notifications](#) & [Guidelines](#)
- Industry Specific Standards: [Effluent/Emission](#) & [General Standards](#)

5.4 WATER POLLUTION

Water is used for drinking, washing, cooking and several other human activities. Two-thirds of the earth's surface is water, but still, we face water scarcity problems. With the ever-increasing population and pollution, the water demand has increased and the quantity of usable water has decreased. Water pollution is the contamination of natural water bodies (e.g., lakes, rivers, sea, ocean, aquifers, groundwater etc.). This form of environmental degradation occurs when pollutants are directly or indirectly added to the water bodies without proper treatment to remove harmful compounds.

The substances which are responsible for causing water pollution are called water pollutants. One of the most severe pollutants is the disease-causing microorganisms called pathogens. Pathogens are mostly bacteria, viruses, and protozoa. Although bacteria are considered harmless if not beneficial, there are a few pathogenic bacteria as well which enter the water bodies through sewers and sanitation systems. Water-borne pathogens cause several diseases such as diarrhoea, gastrointestinal illness, etc. Organic water pollutants include food waste, detergents, leaves, grass, etc. They originate from domestic sewage, discharged from food processing factories and farm wastes which reach the water sources through runoff and pollute them. It is a fact that bacteria decompose complex organic matter into simple organic matter. They consume [oxygen](#) which is dissolved in water. This adversely affects

aquatic life. Chemical pollutants include heavy metals such as mercury, lead, cadmium, etc., solvents from industries, pesticide run-offs, oil spills through ships, etc. They are poisonous to aquatic life forms and cause infertility and death. The metal wastes are dangerous to humans as well when they get absorbed in our bodies. They can damage the nervous system, kidneys, etc.

Based on source, water pollutants can be classified as follows:

1. Domestic wastes and sewage
2. Surface run-off
3. Industrial effluents
4. Thermal pollution
5. Marine pollution

1. Domestic wastes and sewage

Domestic waste and sewage is the biggest polluter of surface and groundwater sources in India. This is due to the gap between the amount of sewage generation and the facilities to dispose of it.

2. Surface run-off

The pollutants present on the surface of land, fertilizers, and pesticides added to the soils are washed down into natural water courses during rains. The flow of fertilizer-rich water into streams and lakes gives rise to eutrophication. Excess pesticides in water also adversely affect aquatic life.

3. Industrial effluents

Effluents generated from industries which are directly disposed of into the water streams without any treatment are a very important cause of water pollution. Several types of liquid effluents having toxic chemicals, acids and bases, etc. are also added into the rivers which kill fish and other aquatic life besides being toxic to human beings.

4. Thermal pollution

Temperature above the normal range is called thermal pollution or calefaction. Thermal pollution occurs as a result of the entry of heated water from industries and power generation plants. The immediate effect of an increase in temperature is a decrease in oxygen concentration. A temperature increase of 10°C will double the rate of many chemical reactions and so the decay of the organic matter, rusting of iron, and the solution rate of salts are also accelerated by calefaction. All organisms have a range of temperature tolerance beyond which they die.

5. Marine pollution

Marine pollution is the pollution of the water of oceans and seas through various sources. Industrial wastes, heavy metals, insecticides, urban and rural

sewage, farm and forest runoffs i.e., wastes of all kinds including those which are not biodegradable and even radioactive wastes are dumped into the sea. In marine water, the most serious pollutant is oil, particularly when afloat at sea. Due to oil spills from oil container vessels into the sea, a large number of useful aquatic life, as well as birds, are killed. Point sources of marine pollution are domestic sewage and industrial effluents. Non-point sources draining to coastal waters include surface run-off from agricultural areas, washout of agrochemicals, and transport of sediments due to coastal erosion.

5.4.1 Sources of Water Pollution

Direct sources of water pollution include effluent outfalls from factories, refineries, industries etc. that emit fluids of varying quality directly into water bodies. Indirect sources of water pollution include contaminants that enter the water supply from soils/groundwater systems and the atmosphere via rainwater. Soils and groundwater contain the residue of human agricultural practices (fertilizers, pesticides, etc.) and improperly disposed of industrial wastes. Atmospheric contaminants are also derived from human practices (such as gaseous emissions from automobiles, factories and even bakeries). If pollution comes from a single location, such as a discharge pipe attached to a factory, it is known as point-source pollution. If pollution comes from one single source but from many different scattered sources. This is called nonpoint-source pollution.

5.4.2 Effects of Water Pollution

Water pollution is a very serious problem as it affects all spheres of life of humans, animals, and plants. Water pollution affects human health, ecosystems, flora and fauna and the economy.

Effect on Human Health

People often get exposed to various water-borne diseases such as cholera, diarrhoea, etc. In severe cases, there may be an outbreak of diseases like Hepatitis, tuberculosis, malaria, encephalitis, etc. Industrial chemicals and agricultural pesticides that culminate in the aquatic environments can accumulate in fish that are later eaten by humans. Fish are easily poisoned with metals that are also later consumed by humans. Mercury has been found to interfere with the development of the nervous system.

Effect on Ecosystems

Nutrient pollution, sewage, fertilizer, and agricultural run-off contain organic materials that when discharged into waters, increase the growth of algae, which causes the depletion of oxygen. The excess growth of algae affects the fish and other aquatic organisms by absorbing and reducing their oxygen supply. The aquatic ecosystems are affected very adversely disturbing all the food chains. The natural ecological balance in rivers and lakes gets upset. Water pollution also causes flooding due to the accumulation of solid waste and soil erosion in streams and rivers.

Effects on Flora and Fauna

Animals, both aquatic and terrestrial, are prone to risks generated from the wastewater. Due to the oil spill, the death of many animals has been reported and there was a great loss to aquatic fauna. Animals are also affected by the solid waste thrown into the water bodies, as it harms them in many ways. Groundwater contamination from pesticides causes reproductive damage to wildlife in ecosystems.

Economic Loss

The increasing water pollution will lead to excessive pressure on the existing treatment plants as well as the establishment of new treatment plants. The fishing industry is also affected badly as the fishes die due to the depletion of oxygen. Recreational and tourism sectors are also affected negatively as lots of money needs to be spent to clean up the water from algae blooms etc.

5.4.3 Water Pollution Control Measures

Water pollution in natural water bodies can be identified and quantified based on various parameters, such as dissolved oxygen (DO), biochemical oxygen demand (BOD), coliform organisms, pH etc. Water pollution can be controlled by diluting the water pollutants in a reservoir. *The various methods for the control of water pollution can be summarized as follows:*

1. The sewage pollutants are required to be treated in sewage treatment plants before their discharge into natural water bodies. It changes them into non-toxic substances or makes them less toxic.
2. Water pollution due to organic insecticides and pesticides can be reduced by the use of very specific and less stable chemicals in the manufacture of insecticides/pesticides. Moreover, the use of bio-fertilizers should be promoted.
3. Oxidation ponds can be useful in removing a low level of radioactive waste.
4. Hot water should not be disposed of directly into the river, as it adversely affects the life of aquatic organisms.
5. Domestic and industrial wastewaters should be treated properly in wastewater treatment plants, before being discharged into the natural aquatic systems.
6. Strict implementation of legislation for water treatment should be done. Suitable strict legislation should be enacted to make it obligatory for the industries to treat the wastewater before being discharged into rivers or seas.
7. No solid waste should be dumped into water bodies.
8. Dead bodies of animals/humans should not be floated in water sources.

Bathing, washing of clothes, and idol immersion should be strictly restricted in natural water bodies. Water hyacinth popularly known as Jalkumbhi can purify water polluted by biological and chemical wastes. It can also filter out heavy metals like cadmium, mercury, lead and nickel as well as other toxic substances found in industrial wastewaters.

Polluted water can be reclaimed by proper sewage treatment plants and the same water can be reused in factories and even for irrigation. Such treated water being rich in phosphorus, potassium and nitrogen can make good fertilizer. Thermal pollution can be reduced by employing techniques through cooling ponds, evaporative or wet cooling towers and dry cooling towers.

5.5 THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974

After the Stockholm conference on Human Environment in June 1972, it was considered to have uniform law all over the country for the main Environment problems endangering the health and safety of people as well as of our flora and fauna. The Water (Prevention & Control of Pollution) Act, 1974 is the first enactment by the Parliament in this direction. This is also the first specific and comprehensive legislation institutionalizing simultaneously the regulatory agencies for controlling water pollution. The Pollution Control Board at the Centre and in the State came into being in terms of this Act. Water Act is enacted to prevent and control Water Pollution in India.

This Act aims to establish the Central and State Pollution Control Board at the central level and also at the state level for each state and give powers to the members to enable them to carry out the purposes of the Act. The Board is having 17 members to carry out the said purposes. The functions of the Board include the following:

- a) To plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells.
- b) To advise the State Government on any matters concerning the prevention, control or abatement of water pollution.
- c) To collect and disseminate information relating to water pollution and prevention, control or abatement thereof.
- d) To encourage, conduct and participate in investigations and research relating to problems of water pollution, prevention, control or abatement of water pollution.
- e) To inspect sewage or trade effluents, works and plants for the treatment of sewage and trade effluents and to review plans, specifications or other data relating to plant set up for the treatment of water, works for the purification thereof and the system for the disposal of sewage or trade effluents or in connection with the grant of any consent as required by this act.

- f) Lay down, modify or annul effluent standards for the sewage and trade effluents.
- g) To evolve economical and reliable methods of treatment of sewage and trade effluents, having regard to the peculiar conditions of soils, climate and water resources of different regions and more especially the prevailing flow characteristics of water in streams and wells, which render it impossible to attain even the minimum degree of dilution and other such functions.

Section 25/26 of the Water Act says that no industry or operator process or any treatment and disposal system can be established without the previous consent of the State Board and no industry or process can discharge sewage or trade effluent into a stream or well or sewer or land above the standards & without the consent of the Board. Whoever contravenes the provisions of section 25 or section 26 of the Water Act shall be punishable with imprisonment for a term which shall not be less than one and half years but which may extend to six years with a fine under section 43/44 of the Water Act. The industry can appeal if aggrieved against the orders of the Board under section 28 of the Water Act. The Board can issue directions for closure of industry & disconnection of electricity in case of persistent defiance by any polluting industry under section 33-A of the Water Act.

5.6 NATIONAL WATER QUALITY MONITORING PROGRAMME (NWMP)

Water is the ultimate source required for the survival of organisms including human beings. Proper monitoring of the water quality and quantity in the freshwater bodies (rivers, lakes, ponds, underground, etc.) are also good indicators of the sustainability of the ecosystem and environment.

Central Pollution Control Board (CPCB) in collaboration with State Pollution Control Boards (SPCBs) in the States and Pollution Control Committees (PCCs) in Union Territories has established a National Water Quality Monitoring Network to assess the status of water quality and to facilitate for prevention and control of pollution in water bodies. Monitoring is carried out with a frequency on a monthly, quarterly, half-yearly and yearly basis. Water samples are analyzed for 9 core, 19 general parameters, 9 trace metals and a set of pesticides as per the Guidelines on Water Quality Monitoring, 2017 issued by the Ministry of Environment, Forest and Climate Change (MoEF & CC). Analyzed water quality parameters are compared with the designated best use water quality criteria recommended by CPCB or primary water quality criteria for outdoor bathing notified under Environment (Protection) Rules, 1986 or BIS Drinking Water Specification i.e., IS:10500-2012 or water quality standards for coastal water depending on the use of water bodies.

The outcome of the National Monitoring Programme

- Every year a compendium of water quality statistics is published and circulated to various scientific institutes and processed data is put on the website for easy access.
- Basin/sub-basin Inventory of water pollution is prepared and published for all the major river basins in the country.
- A water quality atlas is prepared to assess the fitness of river water for desired uses in the country.
- Water quality data is used for the Identification of Polluted Water Bodies based on violation of desired water quality criteria for designated uses.
- Water quality data formed the basis for the formulation of the River Action Plan and Identification of Pollution Sources in 157 cities for interception and diversion of municipal wastewater and stricter surveillance of industrial sources.
- Water quality data is used for Query Response i.e. to reply to Parliament Questions, VIP reference, Public Queries, Public Interest Litigation filed in Supreme Court and Various High Courts and to fulfil the requirement of Non-Governmental organizations, Students, and Researchers.

Achievement of Monitoring Programme

Water quality data is used for the identification of polluted water bodies, identification of pollution sources in cities for the formulation of River Action Plans including interception, diversion and treatment of municipal wastewater, waste management and stricter surveillance of industrial pollution sources. Water quality data is also used for dissemination of information i.e., to reply to Parliament Questions, references, Public Queries, for filing replies in Supreme Court, High Courts and in NGT.

5.7 AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981

Environmental policies of the Government of India include legislation related to the environment. In the Directive Principles of State Policy, Article 48(a) reads that "the state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country"; Article 51-A states that "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures."

It is innovative legislation that lets the State regulate the standard for emission of air pollutants. The Act empowers the State to inspect any factory and check any control equipment and manufacturing process. It further allows the State to take the necessary steps to control air pollution. No industry can operate without meeting the requirements mentioned in this act.

The Air Act was enacted on 29th March 1981. The main objective of this Act was the prevention, control and abatement of air pollution through the Air Pollution Control Boards, constituted at the National Level. The powers and functions of the Board are given below:

- i) To declare any area as an air pollution control area.
- ii) To fix up the emission levels from automobiles.
- iii) Location of the industry from the point of view of pollution.
- iv) To approach the court against any polluter.
- v) To inspect any factory premises to assess pollution being caused by it.
- vi) To obtain any information from industry with regard to pollution.
- vii) To take samples from the concerned unit.

Violation of various Sections of the Act attracts punishment of varying degrees which may be imprisonment of up to three months and/or a fine of up to Rs. 10,000.

5.8 CENTRAL POLLUTION CONTROL BOARD AND STATE POLLUTION CONTROL BOARD

The constitution of central and state boards and the powers and functions of both the boards are under The Water (Prevention and Control of Pollution) Act, 1974.

Constitution of Central Board

According to Section 3, the Central Board shall consist of the following members:

- A full-time Chairman (to be nominated by the Central Government) having knowledge or practical experience in matters related to environmental protection or having knowledge and experience in administration of institutions dealing with aforesaid matters.
- Not more than five officials are nominated by the Central Government.
- No more than five persons are nominated by the Central Government from amongst the members of State Boards.
- Not more than three non-officials were nominated by the government to represent interests of agriculture, fishery, agriculture-trade etc.
- Two persons are nominated by the government to represent the companies or corporations owned by the Central Government.
- One full-time Member-Secretary (to be appointed by the Central Govt.) having knowledge and experience of scientific engineering or management aspects of pollution control.

Constitution of State Boards

According to Section 4 of the Water Act, the State Pollution Control Board may be constituted having the same constitution as the Central Board.

Terms and Service Conditions of the Members of the Board

- Terms and service conditions of the Member Secretary and Chairman shall be as prescribed by the Government.
- The rest of the members shall hold office for a term of three years.
- A member shall be eligible for renomination.
- Central or State Government may remove a member of the Central or State Board at any time by giving him reasonable notice and opportunity.
- The Chairman may resign by addressing his resignation to the government and a member may resign by addressing his resignation to the Chairman.
- In the case of insolvency, unsound mind, a conviction for the offence under this Act, conviction for the offence involving moral turpitude, inability to attend three consecutive meetings, abusing position as a member of the Board, partnership with anybody dealing with sewage or trade effluent etc., are some conditions for disqualification of the member. The seat of the disqualified member shall fall vacant and a person nominated to fill such a vacancy shall hold office for the remaining term.

Functions of the Central Board

According to Section 16, the following are the functions of the Central Board:

- To promote the cleanliness of streams and wells in different areas of the state.
- To advise the Central Government, on matters concerning the prevention and control of water pollution.
- To coordinate the actions of the State Board and resolve disputes among them.
- To provide technical assistance and guidance to the State Boards to carry out research in the prevention and control of water pollution problems.
- To organize training of persons engaged in pollution control.
- To organize a comprehensive programme for pollution control through mass media.
- To lay down standards for streams or wells.

- To prepare manuals, codes or guides for the treatment and disposal of sewage and trade effluents.
- To establish or recognize laboratories for analysis of water samples from any stream, well or trade effluents.

Functions of the State Board

According to Section 17, the following are the functions of the State Board:

- Planning a comprehensive programme for prevention, control and abatement of pollution of streams and wells.
- Advising the State Government regarding water pollution control or location of industries.
- Conducting and encouraging investigations and research relating to different aspects of water pollution.
- To collaborate with the Central Board for training personnel for handling water pollution programmes and organizing related mass education programmes.
- Inspecting trade effluents and wastewater treatment plants.
- Prescribing effluent standards for the sewage and trade effluents.
- Evolving economical and reliable methods of disposal, treatment and reuse of wastewater (in agriculture).
- Laying down the standards of treatment of sewage and trade effluents to be discharged into any stream.
- Making, varying or revoking any order for preservation or control of discharge of waste into streams and wells or construction of systems for disposal of effluents.
- Establishing or recognizing laboratories for analysis of samples.
- Performing such functions as may be entrusted by Central Board or State governments.

Directions

According to Section-18, the Central Board shall be bound by directions given by the Central Government, whereas the State Board shall be bound by directions given by the Central Board or the State Government.

5.9 NATIONAL AIR QUALITY MONITORING PROGRAMME (NAMP)

The network consists of 804 operating stations covering 344 cities/towns in 28 states and 6 Union Territories of the country. The objectives of the NAMP are:

- To determine the status and trends of ambient air quality.
- To ascertain whether the prescribed ambient air quality standards are violated and to identify non-attainment cities.
- To obtain the knowledge and understanding necessary for developing preventive and corrective measures and to understand the natural cleansing process undergoing in the environment through pollution dilution, dispersion, wind-based movement, dry deposition, precipitation and chemical transformation of pollutants generated.
- Under NAMP, four air pollutants viz., Sulphur Dioxide, Oxides of Nitrogen, Respirable Suspended Particulate Matter (RSPM/PM10) and Fine Particulate Matter (PM2.5) have been identified for regular monitoring at all the locations. The monitoring of meteorological parameters such as wind speed and wind direction, relative humidity (RH) and temperature were also integrated with the monitoring of air quality.
- The monitoring of pollutants is carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week, to have one hundred and four (104) observations in a year. The monitoring is being carried out with the help of the Central Pollution Control Board; State Pollution Control Boards; Pollution Control Committees; National Environmental Engineering Research Institute (NEERI), Nagpur. CPCB coordinates with these agencies to ensure the uniformity, and consistency of air quality data and provides technical and financial support to them for operating the monitoring stations. NAMP is being operated through various monitoring agencies.

Ambient Air Quality Monitoring

Ambient air quality monitoring is the organized, long-term assessment of pollutant levels by measuring the quantity of certain pollutants in the surrounding and outdoor air. It is an integral part of an effective air quality management system. Data collected from monitoring stations helps to:

- Assess the extent of the pollution level
- Provide air pollution data to the public on time
- Support implementation of air quality standards
- Evaluate the effectiveness of action plans for pollution control
- Provide information on air quality trends
- Support research on long-term studies of the health effects of air pollution.

5.10 NATIONAL AIR QUALITY INDEX

The Air quality index (AQI) is a tool for the effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour.

There are six AQI categories, namely, good, satisfactory, moderately polluted, poor, very poor, and severe. Each of these categories is decided based on the ambient concentration values of air pollutants and their likely health impacts. The index is calculated using the ambient concentrations of six pollutants - particulates less than 10 μm in diameter (PM₁₀), particulates less than 2.5 μm in diameter (PM_{2.5}), Sulphur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), and ozone for which short-term (up to 24-hours) National Ambient Air Quality Standards are prescribed. Based on the measured ambient concentrations of a pollutant, a sub-index is calculated using standard formulae developed by EPA Environmental Protection Agency. The worst sub-index determines the overall AQI. The AQI categories and associated health impacts are given in the following table 5.2.

Table 5.2 The AQI categories and associated health impacts

AQI	Category	Associated Health Impact
0 to 50	Good	Minimal impact.
51 to 100	Satisfactory	May cause minor breathing discomfort to sensitive people.
101 to 200	Moderate	May cause breathing discomfort to people with lung diseases such as asthma and discomfort to people with heart disease, children and older adults.
201 to 300	Poor	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease.
301 to 400	Very Poor	May cause respiratory illness to the people on prolonged exposure. The effect may be more pronounced in people with lung and heart diseases.
401 to 500	Severe	May cause respiratory effects even on healthy people and serious health impact on people with lung/heart diseases. The health impact may be experienced even during light physical activity.

[It is an app that](#) provides hourly updates on the National Air Quality Index (AQI) published by CPCB. Air Quality Index is a tool for effective communication of air quality in a single number, nomenclature and colour. The public can post complaints with pictures and provide valuable suggestions through the APP.

5.11 AIR AND WATER QUALITY STANDARDS

Air quality standards seek to establish the concentrations of air pollutants to which the public can be exposed without significant adverse effects. The ambient air quality refers to the condition or quality of air surrounding us in the outdoors. National Ambient Air Quality Standards are the standards for ambient air quality set by the Central Pollution Control Board (CPCB) that is applicable nationwide. The CPCB has been conferred this power by the Air (Prevention and Control of Pollution) Act, 1981.

Table 5.3 National Ambient Air Quality Standards

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual*	50	20	a. Improved West and Gaeke
		24 hours**	80	80	b. Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual*	40	30	a. Modified Jacob & Hochheiser (Na- Arsenite)
		24 hours**	80	80	b. Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual*	60	60	a. Gravimetric
		24 hours**	100	100	b. TOEM c. Beta attenuation

4	Particulate Matter (size less than $2.5\mu\text{m}$) or $\text{PM}_{2.5} \mu\text{g}/\text{m}^3$	Annual*	40	40	a.Gravimetric
		24 hours**	60	60	b.TOEM c.Beta attenuation
5	Ozone (O_3) $\mu\text{g}/\text{m}^3$	8 hours**	100	100	a. UV photometric
		1 hour**	180	180	b. Chemiluminescence c. Chemical Method
6	Lead (Pb) $\mu\text{g}/\text{m}^3$	Annual*	0.50	0.50	a.AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
		24 hours**	1.0	1.0	b.ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/m^3	8 hours**	02	02	a.Non-Dispersive Infra-Red (NDIR) spectroscopy
		1 hour**	04	04	
8	Ammonia (NH_3) $\mu\text{g}/\text{m}^3$	Annual*	100	100	a.Chemiluminescence
		24 hours**	400	400	b.Indophenol blue method
9	Benzene (C_6H_6) $\mu\text{g}/\text{m}^3$	Annual*	05	05	a.Gas chromatography-based continuous analyzer b.Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m^3	Annual*	01	01	a.Solvent extraction followed by HPLC/GC analysis

11	Arsenic (As), ng/m ³	Annual*	06	06	a.AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	a.AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

Note: *Annual arithmetic means of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

**24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Water Quality Criteria

Water quality refers to specific levels of water quality desired for identified uses, including drinking, recreation, farming, fish production, other aquatic life, and agricultural and industrial processes.

Table 5.4 Water Quality Criteria

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	- Total Coliforms Organism MPN/100ml shall be 50 or less; - pH between 6.5 and 8.5; - Dissolved Oxygen 6mg/l or more; - Biochemical Oxygen Demand (5 days 20°C) 2mg/l or less
Outdoor bathing (Organized)	B	- Total Coliforms Organism MPN/100ml shall be 500 or less; - pH between 6.5 and 8.5; - Dissolved Oxygen 5mg/l or more; - Biochemical Oxygen Demand (5 days 20°C) 3mg/l or less
Drinking water source after conventional treatment and	C	- Total Coliforms Organism MPN/100ml shall be 5000 or less; - pH between 6 to 9;

disinfection		- Dissolved Oxygen 4mg/l or more; - Biochemical Oxygen Demand (5 days 20°C) 3mg/l or less
Propagation of Wildlife and Fisheries	D	- pH between 6.5 to 8.5; - Dissolved Oxygen 4mg/l or more; - Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	- pH between 6.0 to 8.5; - Electrical Conductivity at 25°C micromhos/cm Max.2250 - Sodium absorption Ratio Max. 26; - Boron Max. 2mg/l
•	Below-E	Not Meeting A, B, C, D & E Criteria

WHO Drinking Water Specifications

WHO has given the international norms on water quality and human health in the form of guidelines that are used as the basis for regulation and standard setting in developing and developed countries.

Table 5.5 WHO Drinking Water Specifications

PARAMETER	UNIT	LIMIT
Aluminium	mg Al/l	0.2
Arsenic	mg As/l	0.05
Barium	mg Ba/l	0.05
Beryllium	ug Be/l	0.2
Cadmium	ug Cd/l	5.0
Calcium	mg Ca/l	200.0
Chromium	mg Cr/l	0.05
Copper	mg Cu/l	1.0
Iron Total	mg Fe/l	0.3
Lead	mg Pb/l	0.01
Magnesium	mg Mg/l	150.0
Manganese	mg Mn/l	0.1
Mercury	ug Hg/l	1.0
Selenium	mg Se/l	0.01
Sodium	mg Na/l	200.0
Zinc	mg Zn/l	5.0

Chlorides	mg Cl/l	250.0
Cyanide	mg Cn/l	0.1
Fluorides	mg F/l	1.5
Nitrates	mg NO ₃ /l	10.0
Nitrites	mg NO ₂ /l	-
Sulphates	mg SO ₄ /l	400.0
Sulphides	mg H ₂ S/l	0
TOTAL "drins"	ug/l	0.03
TOTAL "ddt"	ug/l	1.0
Hydrocarbons	mg/l	0.1
Anionic Detergents	mg/l	0
pH		9.2
Total dissolved solids	mg/l	1500
Total hardness	mg/l	500
Alkalinity	mg/l	500
MICROBIOLOGICAL PARAMETERS		
Total Bacteria	Count/ml	100
Coliform	Count/100ml	0
E. Coli	Count/100ml	0
Salmonella	Count/100ml	0

ug = microgram or ppb

mg = milligram or ppm

Safe Drinking Water Must Have BIS Water Quality Standards

Drinking water is defined as water used for human consumption for drinking and cooking purposes from any source. It includes water (treated or untreated) supplied by any means for human consumption.

The quality standards for drinking water in India are prescribed by the Bureau of Indian Standards (BIS) laid down IS 10500: 2012. The Bureau of Indian Standards initially published the Indian standard for drinking water IS 10500 (Drinking Water-Specification) in the year 1983. Since then, the standard has undergone a few revisions. The 2012 revision was undertaken to upgrade the requirements of the standard to align them with the international specifications for drinking water.

In an ideal situation all samples of water taken from the water distribution system which includes consumers' locations, should be free from coliform

and other biological organisms and bacteriological quality must be as per BIS standards. Bacteriological quality of drinking water includes the absence of E.coli in 100 ml sample. A biological examination is also required for determining the causes of unpleasant tastes and odours in water. The drinking water must be free from microscopic organisms such as algae, zooplanktons, flagellates, parasites and toxin-producing organisms to be safe for drinking, cooking and processing of foods.

The 2012 revision in BIS standards has laid down the specifications for virological requirements. MS2 phages are indicators of viral contamination in drinking water and for water to be safe for drinking MS2 phages shall be absent in 1 litre of water. The standard clearly states that all samples taken from the distribution system including consumer premises should be free from viruses.

According to Central Ground Water Board, BIS IS 10500:2012 the quality of water has standards with two limits “acceptable limits” and “permissible” limits. If any parameter exceeds the limits set by BIS then the water is considered unfit for human consumption. If the water is bacteriology contaminated by E-coli or viruses or if chemical contamination exceeds the maximum permissible it is considered unfit for drinking.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the unit.

1. Write a short note on the Water (Prevention and Control of Pollution) Act, 1974.

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2. Write a short note on the Air (Prevention and Control of Pollution) Act, 1981.

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3. Write a short note on National Water Quality Monitoring Programme.

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4. Write a short note on National Air Quality Monitoring Programme.

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5. Explain the functions of the Central Pollution Control Board.

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5.12 LET US SUM UP

In this unit, we have discussed the features of the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. We have also discussed the National Water Quality Monitoring Programme (NWMP) and National Air Quality Monitoring Programme (NWMP). Further, we have discussed the air and water quality standards.

5.13 KEY WORDS

Air Quality: The cleanliness of the air.

Smog: A form of air pollution that is or looks like a mixture of smoke and fog.

Water Pollution: Water pollution is the contamination of natural water bodies such as lakes, rivers, seas, oceans, aquifers, groundwater, etc.

5.14 SUGGESTED FURTHER READING/REFERENCES

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Web Links

https://moef.gov.in/wp-content/uploads/2019/05/NCAP_Report.pdf

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5.15 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1. Please refer to section 5.5
2. Please refer to section 5.7
3. Please refer to section 5.6
4. Please refer to section 5.9
5. Please refer to section 5.8

UNIT 6 INDUSTRIAL AND NOISE POLLUTION

Environmental Policy
in Pre-independent
India

Structure

- 6.1 Introduction
- 6.2 Objectives
- 6.3 The Factories Act, 1948
 - 6.3.1 Safety in Ports and Docks
 - 6.3.2 Safety in Mines
 - 6.3.3 National Safety Council, 1966
- 6.4 The Motor Vehicles Act, 1988
- 6.5 The Public Liability Insurance Act, 1991
- 6.6 Noise Pollution
 - 6.6.1 Factors influencing Noise Pollution
 - 6.6.2 Sources of Noise Pollution
 - 6.6.3 Functions of CPCB and SPCB
 - 6.6.4 Ambient Air Quality Standards in respect of Noise
 - 6.6.5 The Noise Pollution (Regulations and Control) Rules, 2000
- 6.7 Environmental Impact Assessment (EIA)
 - 6.7.1 Environmental Impact Assessment Notification, 2006
- 6.8 Let Us Sum Up
- 6.9 Key Words
- 6.10 Suggested Further Reading/References
- 6.11 Answers to Check Your Progress

6.1 INTRODUCTION

Industrial and noise pollution is a cause of concern. Several environmental laws are implemented to mitigate the impacts of industrial and noise pollution. The “Factories Act, 1948” contains detailed provisions on health, safety welfare, working hours, leave, penalties etc. As regards the safety of workers working in mines, the Mines Act, 1952 was enacted. The Act contains provisions for measures relating to the health, safety, and welfare of workers in the coal and oil mines. The Act also prescribes the duties of the owner to manage mines/mining operations and the health, and safety of mines. To generate, develop and sustain a voluntary movement on Safety, Health and Environment (SHE) at the national level, the National Safety Council (NSC) was set up by the Ministry of Labour, Government of India (GOI) on the 4th March 1966. The Motor Vehicles Act, 1988 was enacted to regulate all aspects of road transport vehicles. It has provisions for traffic regulations, vehicle insurance, registration of motor vehicles, controlling permits and penalties.

Noise pollution affects both health and behaviour. It can damage physiological health. It is associated with several health conditions, including cardiovascular disorders, hypertension, high-stress levels, tinnitus, hearing loss, sleep disturbances, and other harmful and disturbing effects. Therefore, recognizing the harmful effects of noise, the Indian government included measures to abate noise pollution under the Environment Protection Act, 1986. However, the government decided to come out with separate legislation solely focusing on noise pollution i.e., the Noise Pollution (Regulation and Control) Rules, 2000.

Environmental Impact Assessment (EIA) is essentially a planning tool for preventing environmental problems due to an action. Best practice EIA identifies environmental risks, lessens conflicts by promoting community participation, minimizes adverse environmental effects, informs decision-makers, and promotes environmentally sound projects. EIA Notification, 2006 endeavours to "scrutinize all relevant information about a project or activity to assess its potential adverse impacts on the ecology of a region". Further, the environmental clearance process for new projects or activities involves four stages namely Screening, Scoping, Public Consultation and Appraisal. In this unit, we will be discussing the features of the Factories Act, 1948; the Motor Vehicles Act, 1988 and the Public Liability Insurance Act, 1991. We will also be discussing the Noise pollution (Regulations and Control) Rules, 2000 and the Environmental Impact Assessment Notification, 2006.

6.2 OBJECTIVES

After studying this unit, you should be able to:

- explain the features of the Factories Act, 1948;
- explain the features of the Motor Vehicles Act, 1988;
- explain the features of the Public Liability Insurance Act, 1991;
- discuss the noise pollution and the Noise pollution (Regulations and Control) Rules, 2000; and
- explain the features of Environmental Impact Assessment Notification, 2006.

6.3 THE FACTORIES ACT, 1948

The safety, health and welfare of workers employed in factories are covered under the Factories Act, 1948 which is central legislation. The Act contains detailed provisions on health, safety welfare, working hours, leave, penalties etc. and applies to premises wherein 10 or more workers are employed without the aid of power. The State Governments are empowered under Section 85 of the Act to bring those factories wherein less than 10 workers with the aid of power or 20 or more workers are employed without the aid of power under the purview of this Act. The provisions of the Factories Act and

Rules framed thereunder are enforced by the State Governments through the State Factories Directorate/Inspectorates.

The important provisions in the Factories Act, 1948 relate to-

- Appointment of Inspectors
- Responsibility of the Occupier and Manufacturer of Articles used in factories (This provision was incorporated in 1987 after the Bhopal Tragedy)
- Health Provisions
- Safety provisions
- Welfare Provisions
- Working Hours
- Employment of Young Persons
- Annual Leave with Wages
- Special Provisions (power to apply the Act to certain premises, dangerous operations, a notice of accidents and occupational diseases, power of enquiry, etc.)
- Penalties and Procedures

The important provisions relating to the Safety and Health of workers are given below:

Health Provisions

Every factory must take the following measures as per the provisions of the Act to ensure the health of the workers:

- To keep its premises in a clean state.
- To dispose of wastes and effluents.
- To maintain adequate ventilation and a reasonable temperature.
- To prevent the accumulation of dust and fume.
- To avoid overcrowding.
- To provide sufficient lighting, drinking water, latrines and urinals.

Safety Provisions

Every factory must take the following measures as per the provisions of the Act to ensure the safety of the workers:

- To fence certain machinery.
- To protect workers repairing machinery in motion.
- To protect young persons working on dangerous machines.
- To ensure hoists and lifts and pressure vessels are of sound construction and maintained in good working conditions.
- Floors, stairs and means of access in every factory shall be of sound

construction and properly maintained to ensure the safety of the workers.

- To protect workers from injury to their eyes.
- To protect workers from dangerous dust, gas, fumes and vapours.
- To protect workers from fire, explosives or flammable dust or gas, etc.

An inspector appointed under the Act has the power:

- To enter any place which is used as a factory.
- To examine the premises, plant and machinery.
- To require the production of any register and any other document relating to the factory.
- To take a statement of any person, for carrying out the purposes of the Act.
- To initiate legal action for violation or non-compliance of the provisions of the Act and Rules made thereunder.

Where any workers in the factory contract any notifiable disease as specified in the Third Schedule, the manager of the factory shall send a notice to the inspector of factories in such a form and the manner prescribed (Section 89). The inspectors visit the factories and violations of the provisions of the Act and the Rules framed thereunder are brought to the notice of the occupier/manager for taking necessary actions, particularly when building, machinery and equipment are likely to lead to conditions detrimental to the health and safety of the workers.

The inspectors also have the power to prohibit employment on account of serious hazards, initially for three days. The occupier is directed to remove the hazard before re-employing the workers.

In case the occupier/manager does not abide by the written order issued by the inspector, the prosecution is initiated for the violation of any of the provisions of the Act and Rules.

6.3.1 Safety in Ports and Docks

Port work involves several different employers and contractors who affect each other's activities. These may include harbour authorities, port operators, stevedoring firms, ships' masters and crew. Companies need to have strong and effective health and safety systems in place. These should ensure co-operation, co-ordination and communication between all employers and their workers. The Management of Health and Safety at Work Regulations 1999 set out many requirements for employers to ensure they are adequately managing health and safety. These include:

- A risk assessment of their activities. This should identify the measures they need to have in place to comply with their duties under health and safety law and reduce risks so far as is reasonably practicable.
- Make sure there is effective planning, organization, control, monitoring

and review of the measures they put in place.

- Appointing a competent person to provide health and safety assistance. A competent person is someone with the necessary skills, knowledge and experience to manage health and safety.
- Providing employees with the information they can understand – including people whose first language is not English; and
- Co-operation and coordination with other employers sharing a workplace.

6.3.2 Safety in Mines

The Mines Act, 1952 contains provisions for measures relating to the health, safety, and welfare of workers in the coal, metalliferous and oil mines. The Act prescribes the duties of the owner to manage mines/mining operations and the health, and safety of mines. The Mines Act, 1952 aims to regulate the working condition of workers, annual leave with wages of the workers working in the mines, hours and limitations of employment. Under the Constitution of India, the safety, welfare and health of workers employed in mines are the concern of the Central Government (Entry 55- Union List-Article 246).

The regulations and rules made there constitute the statutory base for regulating the safety, health, welfare and working conditions of persons employed in mines throughout India. The Directorate General of Mines Safety has been entrusted with the function of enforcing the provisions of the Mines Act, 1952 and the Rules and Regulations framed there under, including the Mines Rules, the Mines Rescue Rules and the Mines Vocational Training Rules in respect of all Mines and the Crèche Rules in respect of Non-Coal Mines.

The Directorate General of Mines Safety (DGMS), under the Union Ministry of Labour and Employment, is the enforcement agency which ensures compliance with the stated provisions through inspections by inspecting officers. The Officers of the Directorate are empowered as Inspectors of Mines under the Mines Act, 1952. They have also been given certain responsibilities under allied legislations like the Coal Mines (Conservation and Development) Act, 1974, the Land Acquisition (Mines) Act, 1985, the Factories Act, 1948 and the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 besides the Indian Electricity Act, 1910 and the Indian Electricity Rules, 1955 framed there under. The Inspectors undertake regular inspections. The health, safety and welfare provisions of the Mines Act and Rules are invariably checked during general inspection of the mines. These inquiries serve the dual purpose of identifying the causes and responsibilities for the accidents and formulating remedial measures to prevent the recurrence of similar mishaps.

The violations were observed during a general inspection of the mines. The violations observed during such inspections are being followed up by subsequent follow-up inspections. In case of non-compliance, the improvement notices, prohibitory orders etc. are also being issued till it is complied with.

A list of the subordinate legislation under the Mines Act administered by DGMS is –

- Coal Mines Regulations, 1957.
- Metalliferous Mines Regulations, 1961.
- Oil Mines Regulations, 1984.
- Mines Rules, 1955.
- Mines Vocational Training Rules, 1966.
- Mines Rescue Rules, 1985.
- Mines Creche Rules, 1966.

The owner, agent or manager of the mine is required to comply with the provisions of health and safety provisions of the Mines Act and the rules framed thereunder, as required under Section 18 of the Mines Act, 1952.

6.3.3 National Safety Council, 1966

National Safety Council (NSC) was set up by the Ministry of Labour, Government of India (GOI) on 4th March 1966 to generate, develop and sustain a voluntary movement on Safety, Health and Environment (SHE) at the national level. It is an apex non-profit making, tripartite body, registered under the Societies Registration Act 1860 and the Bombay Public Trust Act 1950. The council has its memorandum of association and rules & regulations. Rules and regulations of the council provide for the setting up of state chapters for furnishing its objectives and carrying out activities at the state level.

To fulfil its objective, NSC carries out various activities:

- These include organizing and conducting specialized training courses, conferences, seminars & workshops, conducting consultancy studies such as safety audits, hazard evaluation & risk assessment;
- Designing and developing SHE promotional materials & publications;
- Facilitating organizations in celebrating various campaigns e.g., Safety Day, Fire Service Week, and World Environment Day.

A computerized Management Information Service has been set up for collection, retrieval and dissemination of information on SHE, health safety and environment aspects. Its headquarters are in Navi Mumbai. Under Rules and Regulations of NSC, Rule 15 mandates NSC to promote the establishment of State Chapters to help supplement its efforts of promoting safety awareness in every part of the country.

6.4 THE MOTOR VEHICLES ACT, 1988

The Motor Vehicles Act, came in the year 1988 by the Indian Parliament. It regulates all aspects of road transport vehicles. It has provisions for traffic regulations, vehicle insurance, registration of motor vehicles, controlling permits and penalties. The major objective of this act was to concentrate on the innocent people who are travelling on the road and can get affected by the drivers.

The Motor Vehicles Act, 1988, like the earlier Act of 1939, makes the insurance of motor vehicles compulsory. The owner of every motor vehicle is bound to insure his vehicle against third-party risk. The insurance company, i.e., the insurer covers the risk of loss to the third party by the use of the motor vehicle.

In India, under the provisions of the Motor Vehicles Act, 1988, every vehicle must have valid insurance to drive on the road. Any vehicle used for social, domestic and pleasure purposes and the insurer's business motor purpose should be insured. Insurance is a contract whereby one party, the insurer, undertakes in return for a consideration, the premium, to pay the other, the insured or assured, a sum of money in the event of the happening of a, or one of various, specified uncertain events. The main types of insurance are life and other personal insurance, marine insurance, accident or property insurance and liability insurance when the sum becomes payable when legal liability is incurred for personal injuries or professional negligence to another.

Section 140 of the Motor Vehicles Act deals with no-fault liability. The term 'no fault liability' means when an accident has occurred due to the use of a motor vehicle or motor vehicles and has caused either death or some sort of injury, the owner of the vehicle is still liable to pay compensation even if it isn't his or her fault. Where death or permanent disablement occurs to any person as a result of an accident due to the use of a motor vehicle, the owners of the vehicle shall be liable to pay compensation for such death or disablement in accordance with the provisions of this section.

The provisions of this Section make way for a fixed amount of compensation which must be paid depending upon whether the accident has caused death or disablement. In case of death then the owners have to pay compensation worth fifty thousand rupees and in case of disablement then the compensation is fixed at rupees twenty-five thousand, these fixed rates of compensation are as per sub-section (1) of Section 140. This Act is in correspondence with section 92-A of the Motor Vehicles Act, 1939.

The "no-fault liability" is a codified law under Sec-140, therefore providing it statutory powers, strict liability on the other hand is not a codified law and comes under tort law, therefore not giving it statutory powers. Another important aspect would be that if an individual were to claim compensation under normal tort law in case of a motor vehicle accident, then he/she would

be able to do so, though the compensation received through this process would and will be deducted from the compensation that was to be awarded by the motor vehicles tribunal.

Third-Party Insurance

A third-party insurance policy is a policy under which the insurance company agrees to indemnify the insured person if he is sued or held legally liable for injuries or damage is done to a third party. The insured is one party, the insurance company is the second party, and the person you (the insured) injured who claims damages against you is the third party.

The third-party liability cover, sometimes also referred to as the 'act only' cover, is a statutory requirement under the Motor Vehicles Act. It is referred to as a third-party cover since the beneficiary of the policy is someone other than the two parties involved in the contract i.e., the insured and the insurance company. The policy does not provide any benefit to the insured; however, it covers the insured's legal liability for death/disability of third-party loss or damage to third-party property.

6.5 THE PUBLIC LIABILITY INSURANCE ACT, 1991

The Public Liability Insurance Act of 1991 deals with hazardous substances, each owner must conclude one or more contracts which include the obligation to provide direct compensation. It should be provided to all those who have suffered damages that should be given to the property of the deceased legal heir in the event of their death.

The 1991 Public Liability Act was ordained to provide direct assistance to people affected by accidents related to handling hazardous materials and other coerced and related matters. Coverage insurance is claimed when someone is injured at the place of business. Places like shopping centres, nightclubs, and theatres need this type of insurance to protect themselves.

It applies to all owners associated with the production or handling of any hazardous chemicals, to provide immediate relief to victims and persons (other than workmen) affected by accidents occurring while handling hazardous substances through the insurance amount paid by the owner of the hazardous substance. Coverage insurance covers claims by community members who have suffered injury or property damage in connection with the business.

A major reason for the enactment of this law was Bhopal Gas Tragedy. It is also known as the Bhopal disaster, in which thousands of people lost their lives. This is considered the worst industrial disaster in the world that happened on a cold winter night in the early hours of December 3, 1984. Around midnight, a chemical reaction began at the Union Carbide (India) Limited plant, which resulted in the release of a deadly gas methyl isocyanate

(MIC) from one of the tanks. Nearly 3,000 people died in the tragedy, and thousands more were physically injured and affected in various forms. Wildlife was killed, injured, and contaminated. People's lives were affected. The environment was polluted with disturbed ecology and wildlife.

The Public Liability Insurance Act 1991 came into force after the tragedy and aims to provide immediate assistance to victims of accidents involving hazardous industries. According to Section 4 of the law, owners of companies that use hazardous substances take out insurance policies to cover liabilities from accidents that cause death, injury, or injury. In addition, Section 7 A, i) and (ii) regulate the establishment of a central government environmental promotion fund to be used in accordance with the law to pay assistance to accident victims in dangerous companies. The law also regulates business owners to take insurance policies that cover obligations not less than the paid-up capital of the business and not more than Rs 50 crore.

6.6 NOISE POLLUTION

Noise is a type of atmospheric pollution in the form of waves. It has increased drastically due to industrialization, high-density traffic, urbanization and technological advancement. Many Industrial psychologists and environmentalists have defined the term noise. According to Blum, noise acts as a distracter and, therefore, interferes with the efficiency of people. Noise levels above 90 decibels (unit for measuring noise intensity) for continuous periods can cause loss of hearing. A single exposure of 150 decibels is known to cause permanent injury to the ear's internal mechanism. In cities like Bombay, Calcutta & Delhi, the average noise level is between 65 and 90 decibels. The effect of environmental noise on foetal development during pregnancy has been subject to research. It is found that constant exposure to noise between 110 and 120 decibels can produce narrowing of vision, vertigo and disruption of equilibrium in the unborn baby keeping the present development pace into account.

6.6.1 Factors influencing Noise Pollution

- Urbanization is the main factor responsible for noise pollution. Due to urbanization, the problem of noise pollution has emerged as one of a serious problems and it has become a serious challenge to the quality of life.
- Industrialization is also a major factor in noise pollution in India. Due to rapid growth in industrialization and advancement of science and technology the problem of noise pollution has become a serious problem and serious challenge to the quality of life of the people in India.
- Due to the population growth, the problem of noise pollution is growing day by day in the residential area. In India, the problem of noise pollution is widespread due to population growth.

- Due to poverty and illiteracy, people are not much aware of the effects and control of noise pollution.

6.6.2 Sources of Noise Pollution

The sources of noise pollution may be broadly classified into industrial sources and non-industrial sources.

Industrial Sources: These sources may include noise from various industrial operations in cities, like boilers, machinery, foundries, flour mills, cutting machines, etc. Noise is a byproduct of energy conservation and every industry produces noise. Pollution due to big machines working at a high speed have high-noise intensity.

Non-Industrial Sources: These sources of noise pollution can further be divided into the following categories.

- Loudspeakers:** One of the common factors creating noise pollution is the indiscriminate use of loudspeakers. In India, no function or ceremonies complete without a loudspeaker which has all the characteristics of creating a public nuisance. Generally, it has been observed that loudspeakers create a big annoyance to the public during sleeping hours.
- Construction Works:** In India, urbanization is developing very fast and huge buildings are being constructed at the fastest speed. During the demolition of old sites and construction of new buildings, huge machines which produce a lot of noise are being commissioned and it has become a common scene in every big city where construction work is in progress. A lot of noise is created during the construction or repair work.
- Automobiles:** They constitute the largest single group of noise menace. In a city, 60 to 70 per cent of noise may come from road traffic. A slow speed of five to twenty km/h during peak hours increase the emission rate of atmospheric and noise pollution.
- Trains:** In India, steam and diesel engines are commonly used by railways which produces a lot of noise. The impact of noise pollution by trains is maximum in residential areas with the introduction of fast trains, the noise has been substantially increased.
- Aircraft:** The use of aircraft of many types generating many types of noise. The higher speed of an aircraft the greater the noise polluter. The noise from these planes can break window panes, crack plaster and shake buildings.
- Radio, Microphones:** Radio and microphones can cause noise pollution if they are switched on at a high volume.
- Projection of Satellites:** The satellites when projected into space with the aid of high explosive rockets. The application and use of these

rockets produce deafening noise at the time of 'lift off' a satellite.

6.6.3 Functions of CPCB and SPCB

The main functions of the Central Pollution Control Board for controlling noise pollution are as follows:

- To advise the Central Government on any matter concerning the prevention, control and abatement of noise pollution.
- To plan and cause to be executed a nationwide programme for the prevention, control, and abatement of noise pollution.
- To provide technical assistance and guidance to the State Pollution Control Board.
- To carry out and sponsor investigations and research related to the prevention, control and abatement of noise pollution.
- To collect, compile, and publish technical and statistical data related to noise pollution and
- To lay down and annul standards for the quality of noise.

The main functions of the State Pollution Control Boards are as follows:

- To plan a comprehensive programme for the prevention, control, and abatement of noise pollution and to secure the execution thereof.
- To advise the State Government on any matter concerning prevention, control, and abatement of noise pollution.
- To collect and disseminate information related to noise pollution.
- To collaborate with Central Pollution Control Board in the programme related to the prevention, control, and abatement of noise pollution; and
- To inspect noise pollution control areas, assess the quality of noise and take steps for prevention, control and abatement of noise pollution in such areas.

6.6.4 Ambient Air Quality Standards in respect of Noise

There are harmful effects on human health and psychological well-being of the people because of the increasing noise levels in public places from various sources industrial activity, construction activity, firecrackers, sound-producing instruments, generator sets, loudspeakers, public address systems, music systems, vehicular horns, and other mechanical devices, it is necessary to regulate and control noise producing and generating sources to maintain the ambient air quality standards in respect of noise.

Table 6.1 Ambient Air Quality Standards in respect of Noise

Area Code	Category of Area/ Zone	Limits in dB(A) Leq*	
		Day Time	Night Time
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence zone	50	40

Note:

1. Day time shall mean from 6:00 AM to 10:00 PM
2. Night time shall mean from 10:00 PM to 6:00 AM
3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutes, courts, religious places, or any other area which is declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.

Further, *dB(A) Leq denotes the time-weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

6.6.5 Noise Pollution (Regulations and Control) Rules, 2000

The reason behind the enactment of these rules was that the noise emitted by loudspeakers, vehicular horns, construction activities, music systems, industries, and other mechanical equipment harms the physical and physiological growth of human beings. These rules were formulated to curb the menace of excessive noise pollution from these sources to create an ambient atmosphere for healthy living. The noise pollution rules prohibit the use of loudspeakers at night and provide provisions for penalties in case permission for the use of such devices is not sought from a competent authority.

Therefore, recognizing the harmful effects of noise, the Indian government included measures to abate noise pollution under the Environment Protection Act, 1986. Noise pollution was one of the categories being addressed under this Act. However, in the late 1990s, the government decided to come out with separate legislation solely focusing on noise pollution i.e., the Noise Pollution (Regulation and Control) Rules, 2000.

Under this Act, the legislation has divided all areas into 4 categories namely industrial areas (A), commercial areas (B), residential areas (C) and silence zones (D). The legislation further states that the State Government has the authority to designate different areas under different categories or “area codes”. The authority to take decisions pertaining to the implementation of

these rules is to be designated by the Central government and can be the District Magistrate, Police Commissioner, etc. An area of 100 meters around hospitals, educational institutions and courts must be designated as silence zones. These rules shall always be taken into consideration before the construction of any project.

Under this Act, the use of loudspeakers, megaphones, and any other form of public address system has been regulated. They shall not be allowed to function in public after 10 PM and till 6 AM. Violation of this can result in a penalty, under provisions of this Act. The authority given the responsibility of upholding this Act can take action and order the prohibition of the use of any of these articles if he/she receives a complaint. Non-compliance after the issue of this order can result in imprisonment.

Article 21

Noise control is important because everybody has the right to a peaceful environment and a valuable existence and not a mere animal existence as provided under Article 21 of the Indian Constitution.

Aircraft Act, 1934

Under the Aircraft Act of 1934, the Union Government has been vested with the power to make rules for the manufacture, possession, use, operation, sale, import, or export of any aircraft. It provides for the control of noise pollution caused due to the frequent take-off and landing that the aerodromes be constructed far away from residential areas.

The Environment (Protection) Act, 1986

This Act provides the Central Government with the power to enact rules regulating environmental pollution which takes into its ambit the regulations relating to noise pollution. Section 6 of the Act empowers the government to enact laws for “the maximum allowable limits of concentration of various environmental pollutants (including noise) pollution in different areas.”

Thus, the government under this Act can lay down rules relating to the maximum allowable limits of noise pollution in the environment and any violations of this permissible limit would invite penalties. Entry 89 of this Act also provides for a maximum limit on the noise level generated by firecrackers and prohibits the manufacture of firecrackers in factories beyond the permissible limit. The limit has been set at 125 dB(A) or 145 dB(C) at 4 meters distance from the point of bursting.

Police Act, 1861

The Police Act of 1861 provides immense powers to the Superintendent of Police and his subordinates regarding the regulation of noise on the occasion of ceremonies, processions, festivals, marches, etc. Section 30A of the Act vests the police with the power to disperse the crowd in case of excessive noise pollution during these occasions.

6.7 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse. UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project before decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers. Environment Impact Assessment in India is statutorily supported by the Environment Protection Act, 1986 which contains various provisions on EIA methodology and process.

The Indian experience with Environmental Impact Assessment began over 20 years back. It started in 1976-77 when the Planning Commission asked the Department of Science and Technology to examine the river-valley projects from an environmental angle. Till 1994, environmental clearance from the Central Government was an administrative decision and lacked legislative support. On 27 January 1994, the then Union Ministry of Environment and Forests, under the Environmental (Protection) Act 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for expansion or modernization of any activity or for setting up new projects listed in Schedule 1 of the notification. The Ministry of Environment, Forests and Climate Change (MoEFCC) notified new EIA legislation in September 2006.

The notification makes it mandatory for various projects such as mining, thermal power plants, river valley, infrastructure (roads, highways, ports, harbours and airports) and industries including very small electroplating or foundry units to get environment clearance. However, unlike the EIA Notification of 1994, the new legislation has put the onus of clearing projects on the state government depending on the size/capacity of the project. The Ministry of Environment, Forest and Climate Change is mandated to formulate policies, laws and rules related to the environment, and to issue environmental clearance (EC) for any developmental project, as in the Schedule of the Environmental Impact Assessment (EIA) Notification, dated 14 September 2006, under the Environmental (Protection) Act, 1986. The EIA notification of 1994 was further improved upon with the more detailed notification of 2006. The EIA system, being multidimensional and interdisciplinary, is concerned with identifying and evaluating the direct and indirect impacts of a project on the environment. The EIA system supports project proponents in incorporating environmental considerations in project planning.

Importance of EIA

- It links the environment with development for environmentally safe and sustainable development.
- It provides a cost-effective method to eliminate or minimize the adverse impact of developmental projects.
- It enables the decision makers to analyze the effect of developmental activities on the environment well before the developmental project is implemented.
- It encourages the adaptation of mitigation strategies in the developmental plan.
- It makes sure that the developmental plan is environmentally sound and within the limits of the capacity of assimilation and regeneration of the ecosystem.
- Environmental considerations are integrated into overall project planning, and the environmental impact assessment is sound, and the proposed environmental mitigation measures are effective.

6.7.1 Environmental Impact Assessment Notification, 2006

In exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986, read with clause (d) of sub-rule of rule 5 of the Environment (Protection) Rules, 1986 and in supersession of the notification number S.O. 60 (E) dated the 27th January, 1994, except in respect of things done or omitted to be done before such supersession, the Central Government hereby directs that on and from the date of its publication the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to this notification entailing capacity addition with change in process and or technology shall be undertaken in any part of India only after the prior environmental clearance from the Central Government or as the case may be, by the State Level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified in this notification.

Categorization of Projects and Activities

Environment Impact Assessment Notification of 2006 has decentralized the environmental clearance projects by categorizing the developmental projects in two categories, i.e., Category A (national level appraisal) and Category B (state level appraisal).

All projects and activities are categorized based on the spatial extent of potential impacts and potential impacts on human health and natural and manmade resources.

All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, shall require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for this notification.

All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects, or change in product mix but excluding those which fulfil the General Conditions (GC) stipulated in the Schedule, will require prior environmental clearance from the State/Union Territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted in this notification.

The environmental clearance process for new projects or activities, since the EIA notification of 2006, involves four stages. The four stages in sequential order are Screening (Only for Category 'B' projects and activities), Scoping, Public Consultation and Appraisal.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the unit.

1. Explain the key features of the Factories Act, 1948.

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2. Explain the Motor Vehicles Act, 1988.

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3. Explain the importance of the Public Liability Insurance Act, 1991.

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4. Explain the sources and factors influencing noise pollution.

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5. Explain the significance of the Noise Pollution (Regulations and Control) Rules, 2000.

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6. Write a short note on Environmental Impact Assessment.

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6.8 LET US SUM UP

In this unit, we have discussed the key features of the Factories Act, 1948; the Motor Vehicles Act, 1988 and the Public Liability Insurance Act, 1991. Further, we have discussed the Noise pollution (Regulations and Control) Rules, 2000 and the Environmental Impact Assessment Notification, 2006.

6.9 KEY WORDS

Environmental Impact: Any significant change, positive or negative in any part of the environment caused by human actions or natural phenomena in a defined area.

Preventive Measures: The actions directed at avoiding negative environmental impacts identified by the EIA. These typically mean changes within the design of the project to help maintain environmental balance.

Project Area: All terrain directly affected by project activities at all stages of development.

Public Consultation: Public Consultation refers to the process by which the concerns of local affected persons and others who have a plausible stake in the environmental impacts of the project or activity are ascertained to take into account all the material concerns in the project or activity design as appropriate.

Scoping: Scoping refers to the process to determine detailed and comprehensive Terms of Reference (ToR) addressing all relevant environmental concerns for the preparation of an Environmental Impact Assessment and Environment Management Report in respect of the project or activity for which Prior Environmental Clearance is sought.

Terms of Reference: Terms of reference are clear and outline specific activities that are required to satisfactorily undertake the Environmental Impact Study.

6.10 SUGGESTED FURTHER READING/REFERENCES

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Web Links

https://labour.gov.in/sites/default/files/ISH_FAQ.pdf

<http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>

6.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1. Please refer to section 6.3
2. Please refer to section 6.4
3. Please refer to section 6.5
4. Please refer to sections 6.6.1 and 6.6.2
5. Please refer to section 6.6.5
6. Please refer to section 6.7

UNIT 7 BIO-MEDICAL AND SOLID WASTE POLLUTION

Environmental Policy
in Pre-independent
India

Structure

- 7.1 Introduction
- 7.2 Objectives
- 7.3 Hazardous Waste Management Rules
- 7.4 Bio-Medical Waste Management Rules
 - 7.4.1 The Bio-Medical Waste (Management and Handling) Rules, 1998
 - 7.4.2 The Bio-medical Waste Management Rules, 2016
- 7.5 Solid Waste Management Rules
 - 7.5.1 Municipal Solid Wastes (Management and Handling) Rules, 2000
 - 7.5.2 The Solid Waste Management Rules, 2016
- 7.6 Let Us Sum Up
- 7.7 Key Words
- 7.8 Suggested Further Reading/References
- 7.9 Answers to Check Your Progress

7.1 INTRODUCTION

Hazardous waste means any waste, that because of characteristics, such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger to health, or the environment. It comprises the waste generated during the manufacturing processes of commercial products such as industries involved in petroleum refining, production of pharmaceuticals, petroleum, paint, aluminium, electronic products etc. Hazardous wastes could be highly toxic to humans, animals and plants and are highly inflammable or explosive. Hazardous wastes are classified based on their biological, chemical, and physical properties. These properties generate materials that are toxic, reactive, ignitable, corrosive, infectious, or radioactive. India generates around 7 million tonnes of hazardous waste every year. Household waste that can be categorized as hazardous waste includes old batteries, shoe polish, paint tins, old medicines, and medicine bottles. In this unit, we will be discussing the important provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, the Bio-Medical Waste (Management and Handling) Rules, 1998 and the Bio-medical Waste Management Rules, 2016 and the Solid Waste Management Rules, 2016.

7.2 OBJECTIVES

After studying this unit, you should be able to:

- explain the provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016;

- explain the provisions of the Bio-Medical Waste (Management and Handling) Rules, 1998 and the Bio-medical Waste Management Rules, 2016; and
- explain the features of the Solid Waste Management Rules, 2016.

7.3 HAZARDOUS WASTE MANAGEMENT RULES

Under the provision of the Environment (Protection) Act, 1986, the Ministry of Environment, Forest and Climate Change (MoEF & CC) promulgated Hazardous Waste (Management and Handling) Rules, 1989. Hazardous Waste Management Rules are notified to ensure safe handling, generation, processing, treatment, package, storage, transportation, use, reprocessing, collection, conversion, and offering for sale, destruction and disposal of hazardous waste. In 2008, Hazardous Waste (Management and Handling) Rules, 1989 were amended and a new rule titled "Hazardous waste (Management, Handling and Transboundary Movement) Rules, 2008" was promulgated. Subsequently, these rules were amended in the years 2009 & 2010 to enable proper management and handling of hazardous waste in the country. We have discussed in the other unit of this course the Basel Convention on transboundary movement of hazardous waste and India has also ratified the Basel convention. Hazardous waste management rules have been amended to include other wastes such as Waste tyres, paper waste, metal scrap, used electronic items, etc. and also to reduce the movements of hazardous waste between nations.

In exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, except as respects things done or omitted to be done before such supersession, the Central Government notified the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

These rules shall apply to the management of hazardous and other wastes. However, it shall not apply to wastewater and exhaust gases, wastes arising out of the operation from ships beyond five kilometres of the relevant baseline, radioactive wastes, bio-medical wastes and Municipal solid wastes. The Rules lay down corresponding duties of various authorities such as MoEF, CPCB, State/UT Govts., SPCBs/PCCs, DGFT, Port Authority and Custom Authority while State Pollution Control Boards/Pollution Control Committees have been designated with wider responsibilities touching across almost every aspect of Hazardous wastes generation, handing and their disposal. Hazardous Waste Management Rules provide for an effective inventorization and controlled handling, generation, collection, treatment, transport storage and disposal of hazardous wastes. Non-compliance or contradiction of any section of these rules is punishable under EPA, 1986.

1. Responsibilities of the occupier for management of hazardous and other wastes

The occupier and the operator of a facility shall be responsible for the proper collection, reception, treatment, storage and disposal of hazardous wastes. It shall be the responsibility of the occupier and the operator of a facility, to take all steps to ensure that the wastes listed in the schedules are properly handled, and disposed of without any adverse effects on the environment. For the management of hazardous and other wastes, an occupier shall follow the following steps, namely: (a) prevention; (b) minimization; (c) reuse, (d) recycling; (e) recovery, utilization including co-processing; (f) safe disposal. Indeed, the occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes. The occupier shall take all the steps while managing hazardous and other wastes to contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and provide persons working on the site with appropriate training, equipment and the information necessary to ensure their safety.

2. Responsibilities of State Government

Department of Industry in the State or any other government agency authorized by the State Government, ensure earmarking or allocation of industrial space or shed for recycling, pre-processing and other utilization of hazardous or other waste in the existing and upcoming industrial park, estate and industrial clusters.

As regards the welfare and safety of the workers, the Department of Labour in the State or any other government agency authorized by the State Government shall ensure recognition and registration of workers involved in recycling, preprocessing and other utilization activities. Further, the department undertakes industrial skill development activities for the workers involved in recycling, pre-processing and other utilization. It also undertakes annual monitoring to ensure the safety and health of workers involved in recycling, pre-processing and other utilization.

3. Grant of authorization for managing hazardous and other wastes

Every occupier of the facility who is engaged in handling, generation, collection, storage, packaging, transportation, use, treatment, processing, recycling, recovery, pre-processing, co-processing, utilization, offering for sale, transfer or disposal of the hazardous and other wastes shall be required to make an application to the State Pollution Control Board and obtain an authorization from the SPCB.

The authorized actual user of hazardous and other wastes shall maintain records of hazardous and other wastes purchased in a passbook issued by the State Pollution Control Board along with the authorization.

4. Power to suspend or cancel an authorization

The State Pollution Control Board may suspend or cancel an authorization if the holder of the authorization has failed to comply with any of the conditions of the authorization or with any provisions of the Act or these rules.

5. Import and Export of Hazardous and Other Wastes

The import of hazardous and other wastes from any country shall be permitted only for recycling, recovery, reuse and utilization including co-processing. Import of hazardous and other wastes from any country to India for disposal shall not be permitted. The export of hazardous and other wastes from India listed in Part A and Part B of Schedule III and Schedule VI shall be with the permission of the Ministry of Environment, Forest and Climate Change.

6. Treatment, Storage and Disposal Facility for Hazardous and Other Wastes

The State Government, occupier, operator of a facility or any association of occupiers shall individually or jointly be responsible for the identification of sites for establishing the facility for treatment, storage and disposal of the hazardous and other waste in the State.

7. Packaging, Labelling, and Transport of Hazardous and Other Wastes

Any occupier handling hazardous or other wastes and operator of the treatment, storage and disposal facility shall ensure that the hazardous and other wastes are packaged in a manner suitable for safe handling, storage and transport as per the guidelines issued by the Central Pollution Control Board from time to time.

8. Liability and Compensation

The occupier, transporter and operator of a facility shall be liable for damages caused to the environment resulting due to improper handling and disposal of hazardous waste listed in the schedule.

7.4 BIO-MEDICAL WASTE MANAGEMENT RULES

7.4.1 The Bio-Medical Waste (Management and Handling) Rules, 1998

The Bio-medical Waste (Handling and Management) Rules, 1998 were notified by the Ministry of Environment & Forests (MoEF) under the Environment (Protection) Act, 1986. These rules aim to streamline the process of waste segregation, collection, treatment and disposal. These rules apply to all persons who generate, collect, receive, store, transport, treat,

dispose, or handle bio-medical waste in any form.

1. Definitions

The following are the key terms defined in the Bio-medical Waste (Handling and Management) Rules, 1998:

- i) “Act” means the Environment (Protection) Act, 1986 (29 of 1986);
- ii) “animal house” means a place where animals are reared/kept for experiments or testing purposes;
- iii) “authorisation” means permission granted by the prescribed authority for the generation, collection, reception, storage, transportation, treatment, disposal and/or any other form of handling of bio-medical waste in accordance with these rules and any guidelines issued by the Central Government;
- iv) “authorised person” means an occupier or operator authorised by the prescribed authority to generate, collect, receive, store, transport, treat, dispose, and/or handle bio-medical waste in accordance with these rules and any guidelines issued by the Central Government;
- v) “bio-medical waste” means any waste which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biologicals, and including categories mentioned in Schedule I;
- vi) “biologicals” means any preparation made from organisms or micro-organisms or product of metabolism and biochemical reactions intended for use in the diagnosis, immunisation or the treatment of human beings or animals or research activities pertaining thereto;
- vii) “bio-medical waste treatment facility” means any facility wherein treatment, disposal of bio-medical waste or process incidental to such treatment or disposal is carried out.
- viii) “occupier” in relation to any institution generating bio-medical waste, which includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called, means a person who has control over that institution and/or its premises;
- ix) “operator of a bio-medical waste facility” means a person who owns or controls or operates a facility for the collection, reception, storage, transport, treatment, disposal or any other form of handling of bio-medical waste;
- x) “Schedule” means Schedule appended to these rules.

2. Duty of Occupier

It shall be the duty of every occupier of an institution generating bio-medical

waste which includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank by whatever name called to take all steps to ensure that such waste is handled without any adverse effect to human health and the environment.

3. Treatment and Disposal

- i) Bio-medical waste shall be treated and disposed of in accordance with Schedule I, and compliance with the standards prescribed in Schedule V.
- ii) Every occupier, where required, shall set up in accordance with the time-schedule in Schedule VI, requisite bio-medical waste treatment facilities like incinerator, autoclave, microwave system for the treatment of waste, or, ensure requisite treatment of waste at a common waste treatment or any other waste treatment facility.

4. Segregation, Packaging, Transportation and Storage

- i) Bio-medical waste shall not be mixed with other wastes.
- ii) Bio-medical waste shall be segregated into containers/bags at the point of generation in accordance with Schedule II before its storage, transportation, treatment and disposal. The containers shall be labelled according to Schedule III.
- iii) If a container is transported from the premises where bio-medical waste is generated to any waste treatment facility outside the premises, the container shall, apart from the label prescribed in Schedule III, also carry information prescribed in Schedule IV.
- iv) Notwithstanding anything contained in the Motor Vehicles Act, 1988, or rules thereunder, untreated bio-medical waste shall be transported only in a such vehicle as may be authorised for the purpose by the competent authority as specified by the Government.
- v) No untreated bio-medical waste shall be kept stored beyond a period of 48 hours: Provided that if for any reason it becomes necessary to store the waste beyond such period, the authorised person must take permission of the prescribed authority and take measures to ensure that the waste does not adversely affect human health and the environment.
- vi) The Municipal body of the area shall continue to pick up the transport segregated non-bio-medical solid waste generated in hospitals and nursing homes, as well as duly treated bio-medical wastes for disposal at the municipal dump site.

5. Prescribed Authority

- i) The prescribed authority for enforcement of the provisions of these rules shall be the State Pollution Control Boards in respect of States and the Pollution Control Committees in respect of the Union territories and all pending cases with a prescribed authority appointed earlier shall stand

transferred to the concerned State Pollution Control Board, or as the case may be, the Pollution Control Committees.

- ii) The prescribed authority for the State or Union Territory shall be appointed within one month of the coming into force of these rules.
- iii) The prescribed authority shall function under the supervision and control of the respective Government of the State or Union Territory.
- iv) The prescribed authority shall on receipt of Form I make such enquiry as it deems fit and if it is satisfied that the applicant possesses the necessary capacity to handle bio-medical waste in accordance with these rules, grant or renew an authorisation as the case may be.
- v) An authorisation shall be granted for three years, including an initial trial period of one year from the date of issue. Thereafter, an application shall be made by the occupier/operator for renewal. All such subsequent authorisation shall be for three years. A provisional authorisation will be granted for the trial period, to enable the occupier/operator to demonstrate the capacity of the facility.
- vi) The prescribed authority may after giving reasonable opportunity of being heard to the applicant and for reasons thereof to be recorded in writing, refuse to grant or renew the authorisation.
- vii) Every application for authorisation shall be disposed of by the prescribed authority within ninety days from the date of receipt of the application.
- viii) The prescribed authority may cancel or suspend an authorisation, if for reasons, to be recorded in writing, the occupier/operator has failed to comply with any provision of the Act or these rules: Provided that no authorisation shall be cancelled or suspended without giving a reasonable opportunity to the occupier/operator of being heard.

6. Authorisation

- i) Every occupier of an institution generating, collecting, receiving, storing, transporting, treating, disposing and/or handling bio-medical waste in any other manner, except such occupier of clinics, dispensaries, pathological laboratories, blood banks providing treatment/service to less than 1000 (one thousand) patients per month, shall make an application in Form I to the prescribed authority for grant of authorisation.
- ii) Every operator of a bio-medical waste facility shall make an application in Form I to the prescribed authority for grant of authorisation.
- iii) Every application in Form I for grant of authorisation shall be accompanied by a fee as may be prescribed by the Government of the State or Union Territory.
- iv) The authorization to operate a facility shall be issued in Form IV, subject to conditions laid therein and such other conditions, as the prescribed

authority, may consider necessary.

7. Advisory Committee

- i) The Government of every State/Union Territory shall constitute an Advisory Committee. The Committee will include experts in the field of medical and health, animal husbandry and veterinary sciences, environmental management, municipal administration, and any other related department or organisation including non-governmental organisations.
- ii) As and when required, the Committee shall advise the Government of the State/Union Territory and the prescribed authority about matters related to the implementation of these rules.

8. Annual Report

Every occupier/operator shall submit an annual report to the prescribed authority in Form II by 31st January every year, to include information about the categories and quantities of bio-medical wastes handled during the preceding year. The prescribed authority shall send this information in a compiled form to the Central Pollution Control Board by 31st March every year.

9. Maintenance of Records

- i) Every authorised person shall maintain records related to the generation, collection, reception, storage, transportation, treatment, disposal and/or any form of handling of bio-medical waste in accordance with these rules and any guidelines issued.
- ii) All records shall be subject to inspection and verification by the prescribed authority at any time.

10. Accident Reporting

When any accident occurs at any institution or facility or any other site where bio-medical waste is handled or during transportation of such waste, the authorised person shall report the accident in Form III to the prescribed authority forthwith.

11. Appeal

- i) Any person aggrieved by an order made by the prescribed authority under these rules may, within thirty days from the date on which the order is communicated to him, prefer an appeal to such authority as the Government of State/Union Territory may think fit to constitute: Provided that the authority may entertain the appeal after the expiry of the said period of thirty days if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.

- ii) Any person aggrieved by an order of the Director General, Armed Forces Medical Services under these rules may, within thirty days from the date on which the order is communicated to him prefer an appeal to the Central Government in the Ministry of Environment and Forests.

12. Common Disposal/Incineration Sites

Without prejudice to rule 5 of these rules, the Municipal Corporations, Municipal Boards or Urban Local Bodies, as the case may be, shall be responsible for providing suitable common disposal/incineration sites for the biomedical wastes generated in the area under their jurisdiction and areas outside the jurisdiction of any municipal body, it shall be the responsibility of the occupier generating bio-medical waste/operator of a bio-medical waste treatment facility to arrange for suitable sites individually or in association, to comply with the provisions of these rules.

7.4.2 The Bio-medical Waste Management Rules, 2016

As per the Bio-medical Waste (Handling and Management) Rules, 1998, bio-medical waste was divided into eight categories. However, multiple categories of waste were clubbed to be disposed of into the four colour-coded bags. Multiple categories of waste have been observed to be confusing by the housekeeping staff. Further, the occupiers had their treatment facilities (such as an incinerator, burial pits, etc.) for the final disposal of bio-medical waste. Also, it was found that up to 82% of the healthcare facilities either had no credible bio-medical waste management or require improvement (Bhalla et al. 2019).

To address these issues, in the exercise of the powers conferred by Section 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Bio-Medical Waste (Management and Handling) Rules, 1998 and further amendments made thereof, the Central Government notified the Bio-medical Waste Management Rules, 2016. These rules apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio-medical waste in any form including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, AYUSH hospitals, clinical establishments, research or educational institutions, health camps, medical or surgical camps, vaccination camps, blood donation camps, first aid rooms of schools, forensic laboratories and research labs.

The prescribed authority for enforcement of the provisions of these rules in respect of all the health care facilities located in any State/Union Territory is the respective State Pollution Control Board (SPCB)/ Pollution Control Committee (PCC) and in the case of health care establishments of the Armed Forces under the Ministry of Defence shall be the Director General, Armed Forces Medical Services (DGAFMS). These rules stipulate the duties of the Occupier or Operator of a Common Bio-medical Waste Treatment Facility as well as the identified authorities. According to these rules, every occupier or

operator handling bio-medical waste, irrespective of the quantity is required to obtain authorisation from the respective prescribed authority i.e., State Pollution Control Board and Pollution Control Committee, as the case may be. These rules consist of four schedules and five forms (<https://cpcb.nic.in/bio-medical-waste-rules/>).

The key differences between the Bio-Medical Waste (Management and Handling) Rules, 1998 and the Bio-medical Waste Management Rules, 2016 are as follows: (1) the removal of multiple categories and to continue with only four colour codes, and (2) that no occupier was permitted to establish an on-site treatment and disposal facility if service of a common biomedical waste treatment facility (CBMWTF) is available within a distance of 75 km (Bhalla et al. 2019).

The Bio-Medical Waste Management Rules, 2016 have also been amended in 2018 to improve compliance and strengthen the implementation of environmentally sound management of biomedical waste in India.

Salient features of Bio-Medical Waste Management (Amendment) Rules, 2018:

(Source: <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1526326>)

1. “Bio-medical waste generators including hospitals, nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks, health care facilities, and clinical establishments will have to phase out chlorinated plastic bags (excluding blood bags) and gloves by March 27, 2019.
2. All healthcare facilities shall make available the annual report on their website within two years from the date of publication of the Bio-Medical Waste Management (Amendment) Rules, 2018.
3. Operators of common bio-medical waste treatment and disposal facilities shall establish barcoding and global positioning system for handling bio-medical waste in accordance with guidelines issued by the Central Pollution Control Board by March 27, 2019.
5. The State Pollution Control Boards/Pollution Control Committees have to compile, review and analyze the information received and send this information to the Central Pollution Control Board in a new Form (Form IV A), which seeks detailed information regarding district-wise bio-medical waste generation, information on Health Care Facilities having captive treatment facilities, information on common bio-medical waste treatment and disposal facilities.
6. Every occupier, i.e. a person having administrative control over the institution and the premises generating biomedical waste shall pre-treat the laboratory waste, microbiological waste, blood samples, and blood bags through disinfection or sterilization on-site in the manner as

prescribed by the World Health Organization (WHO) or guidelines on the safe management of wastes from health care activities and WHO Blue Book 2014 and then sent to the Common bio-medical waste treatment facility for final disposal".

7.5 SOLID WASTE MANAGEMENT RULES

7.5.1 Municipal Solid Wastes (Management and Handling) Rules, 2000

Municipal Solid Waste (MSW) consists of household waste, construction and demolition debris, sanitation residue, and waste from streets. With rising urbanization and change in lifestyle and food habits, the amount of municipal solid waste has been increasing rapidly and its composition also continuously changing. It was reported that 70% of the Indian cities lack adequate capacity to transport MSW and there are no sanitary landfills to dispose of the waste. The existing landfills are neither well equipped nor are not lined properly to protect against contamination of soil and groundwater. Over the last few years, the consumer market has grown rapidly leading to products being packed in cans, aluminium foils, plastics, and other non-biodegradable items that cause incalculable harm to the environment.

In exercise of the powers conferred by sections 3, 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government notified the Municipal Solid Wastes (Management and Handling) Rules, 2000 to regulate the management and handling of the municipal solid wastes. These rules shall apply to every municipal authority responsible for the collection, segregation, storage, transportation, processing and disposal of municipal solid wastes.

Municipal Solid Wastes (Management and Handling) Rules, 2000 are being implemented by the municipal authorities as these authorities are responsible for the management of municipal solid waste. The Rules are in force since September 2000. Local bodies are required to ensure that solid waste generated in the city/town is managed in accordance with the provisions of the Rule relating to the collection, segregation, storage, transportation, processing and disposal. Central Pollution Control Board (CPCB) during the reporting year interacted with State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) in union territories and provided feedback on various aspects of the Rule. SPCBs/PCCs persuaded local bodies to seek authorization and formulate an action plan for the management of solid waste.

The municipal authority shall comply with these rules as per the implementation schedule. Municipal Solid Wastes (Management and Handling) Rules, 2000 contain four schedules and these are required to be complied with by the local bodies.

Schedule I

1. Setting up of waste processing and disposal facilities
2. Monitoring the performance of waste processing and disposal facilities
3. Improvement of existing landfill sites as per provisions of these rules
4. Identification of landfill sites for future uses and making sites ready for operation.

Schedule II

1. Collection of municipal solid wastes

- a) Organizing house-to-house collection of municipal solid wastes through any of the methods, like community bin collection (central bin), house-to-house collection, collection on regular pre-informed timings and scheduling by using bell ringing of musical vehicle (without exceeding permissible noise levels);
- b) Devising collection of waste from slums and squatter areas or localities including hotels, restaurants, office complexes and commercial areas;
- c) Wastes from slaughterhouses, meat and fish markets, and fruits and vegetable markets, which are biodegradable, shall be managed to make use of such wastes;
- d) Bio-medical wastes and industrial wastes shall not be mixed with municipal solid wastes and such wastes shall follow the rules separately specified for the purpose;
- e) Collected waste from residential and other areas shall be transferred to the community bin by hand-driven containerized carts or other small vehicles;
- f) Horticultural and construction or demolition wastes or debris shall be separately collected and disposed off following proper norms. Similarly, wastes generated at dairies shall be regulated in accordance with the State laws;
- g) Waste (garbage, dry leaves) shall not be burnt;
- h) Stray animals shall not be allowed to move around waste storage facilities or at any other place in the city or town and shall be managed in accordance with the State laws.

2. Segregation of Municipal Solid Wastes

The municipal authority shall organize awareness programmes for the segregation of wastes and shall promote recycling or reuse of segregated materials. The municipal authority shall undertake a phased programme to ensure community participation in waste segregation.

3. Storage of Municipal Solid Wastes

Municipal authorities shall establish and maintain storage facilities in such a manner as they do not create unhygienic conditions around them.

4. Transportation of Municipal Solid Wastes

Vehicles used for transportation of wastes shall be covered. Waste should not be visible to the public, nor exposed to an open environment preventing their scattering.

5. Processing of Municipal Solid Wastes

Municipal authorities shall adopt suitable technology or a combination of such technologies to make use of wastes to minimize the burden on landfill. Land filling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing. Land filling shall also be carried out for residues of waste processing facilities as well as pre-processing rejects from waste processing facilities. Landfilling of mixed waste shall be avoided unless the same is found unsuitable for waste processing.

Schedule III

Schedule III lays specifications for the selection of landfill sites and the operation of landfilling.

- a) It shall be the responsibility of the concerned municipal authority to identify the landfill sites, operation and maintenance.
- b) The selection of landfill sites shall be based on an examination of environmental issues.
- c) The landfill site shall be planned and designed with proper documentation of a phased construction plan as well as a closure plan.
- d) The landfill site shall be fenced or hedged and provided with a proper gate to monitor incoming vehicles or other modes of transportation.
- e) The landfill site shall be well protected to prevent the entry of unauthorized persons and stray animals.
- f) Wastes subjected to landfilling shall be compacted in thin layers using landfill compactors to achieve a high density of the wastes.
- g) To prevent pollution problems from landfill operations, the following provisions shall be made, namely:
 - i) diversion of storm water drains to minimize leachate generation and prevent pollution of surface water and also for avoiding flooding and the creation of marshy conditions.
 - ii) Provisions for management of leachate collection and treatment

shall be made.

- iii) Prevention of run-off from landfill areas entering any stream, river, lake or pond
- iv) Construction of a non-permeable lining system at the base and walls of the waste disposal area.
- v) A vegetative cover shall be provided over the completed site by the selection of locally adopted non-edible perennial plants that are resistant to drought and extreme temperatures. The selected plants shall have the ability to thrive on low-nutrient soil with minimum nutrient addition. The plantation is to be made in sufficient density to minimize soil erosion.

Schedule IV

Schedule IV relates to the “Standards for Composting, Treated Leachates and Incineration”.

1. The waste processing or disposal facilities shall include composting, incineration, palletization, energy recovery or any other facility based on state-of-the-art technology duly approved by the Central Pollution Control Board.
2. In case of engagement of a private agency by the municipal authority, a specific agreement between the municipal authority and the private agency shall be made particularly, for the supply of solid waste and other relevant terms and conditions.
3. To prevent pollution problems from compost plants and other processing facilities, the following shall be complied with, namely:
 - a. The incoming wastes at the site shall be maintained before further processing. To the extent possible, the waste storage area should be covered. If such storage is done in an open area, it shall be provided with an impermeable base with a facility for collection of leachate and surface water run-off into lined drains leading to a leachate treatment and disposal facility;
 - b. Necessary precautions shall be taken to minimize the nuisance of odour, flies, rodents, bird menace and fire hazard;
 - c. In case of breakdown or maintenance of plant, waste intake shall be stopped and arrangements are worked out for diversion of wastes to the landfill site;
 - d. Pre-process and post-process rejects shall be removed from the processing facility on regular basis and shall not be allowed to pile at the site. Recyclables shall be routed through appropriate vendors. The non-recyclables shall be sent to well-designed landfill site(s).

- e. In the case of a compost plant, the windrow area shall be provided with an impermeable base. Such a base shall be made of concrete or compacted clay, 50 cm thick, having a permeability coefficient less than 10⁻⁷ cm/sec. The base shall be provided with a 1 to 2 per cent slope and circled by lined drains for collection of leachate or surface run-off;
- f. Ambient air quality monitoring shall be regularly carried out particularly for checking odour nuisance in the down-wind direction on the boundary of a processing plant.

7.5.2 The Solid Waste Management Rules, 2016

The Government has notified the new Solid Waste Management Rules, 2016 which will supersede the Municipal Solid Wastes (Management and Handling) Rules 2000. The salient features of the SWM Rules, 2016 are as follows (https://cpcb.nic.in/uploads/MSW/Salient_features_SWM_Rules.pdf; https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf):

1. The jurisdiction of the rules has been extended beyond the municipal area. These rules apply to (i) Every urban local body (Megacity to Panchayat level), (ii) outgrowth in urban agglomerations, (iii) census towns as declared by the Registrar General and Census Commissioner of India, (iv) notified areas, (v) notified industrial townships, (vi) areas under the control of Indian Railways, (vii) airports/ airbases, (viii) Ports and harbours, (ix) defence establishments, (x) special economic zones, (xi) State and Central government organizations, (xii) places of pilgrims, (xiii) religious and historical importance as may be notified by the respective State government from time to time and (xiv) every domestic, institutional, commercial and any other non-residential solid waste generator situated in the areas.
2. The Waste Generators include every household, event organizers, street vendors, RWAs & Market Associations, Gated communities having more than area 5000 square metres, hotels & restaurants, etc. 3. Duties of Waste generators and Authorities:
 - i) Every Waste Generator shall segregate waste and store it separately and hand it over to Municipal workers or authorized waste pickers.
 - ii) Ministry of Environment, Forest & Climate Change shall constitute a "Central Monitoring Committee" to monitor and review every year.
 - iii) Ministry of Urban Development (MoUD) shall frame National Policy on Solid Waste Management (SWM) and coordinate with States/UTs, provide technical guidelines, financial support, training to local bodies, etc.
 - iv) Departments of Fertilizers and Chemicals shall assist in market

development for city compost and make it available to companies (3/4 bags compost: 6/7 bags Fertilizers).

- v) Ministry of Agriculture shall make flexible Fertilizer Control Order, promote utilization of compost, testing facility for compost and issue guidelines.
 - vi) Ministry of Power shall fix the tariff of power generation from the Waste-to-Energy project and ensure distribution through companies.
 - vii) Ministry of New and Renewable Energy (MNRE) shall facilitate infrastructure for waste-to-Energy plants and provide a subsidy.
 - viii) Secretary In-charge, Urban Development (state/Union Territories) shall prepare State Policy/Strategy, adopt waste reduction, reuse, recycling, recovery strategy, coordinate for state planning, identification of common/regional landfills, notify guidelines of buffer zones.
 - ix) District Collector/Magistrate shall facilitate identification of landfill site, and quarterly review the performance of local bodies.
 - x) Secretary, Panchayats performs the same functions as Secretary, Urban Development at the Panchayat level.
 - xi) CPCB shall coordinate with SPCBs/PCCs for monitoring and Annual Reports, formulation of standards, review of new technologies, prepare guidelines for buffer zones restricting residential, commercial and construction activities areas; and inter-state movement of waste.
 - xii) Local Authority/Panchayats shall prepare SWM plan with a timeline and its implementation, segregate, adopt waste reduction, reuse, recycling strategy, material recovery, processing/ disposal of Waste, user fee and levy spot fine.
 - xiii) SPCBs/PCCs shall monitor, issue authorization and regulate.
 - xiv) Manufacturers/Brand owners shall facilitate collecting back wastes of their products and provide a pouch for packaging sanitary wastes, etc.
 - xv) Industry (cement, power plant, etc.) shall use “Refused Derived Fuel” (RDF) within 100 km.
 - xvi) Operator of facilities shall follow guidelines/standards
4. The criteria and actions to be taken for solid waste management in hilly areas include avoiding landfill on the hills, making waste transfer stations, strict action for littering and constructing landfill in plain areas.
5. Criteria for waste to energy process:

- i) Non-recyclable waste having a calorific value of 1500 Kcal/kg or more shall not be disposed of in landfills and shall only be utilized for generating energy either through refuse-derived fuel or by giving away as feed stock for preparing refuse-derived fuel.
- ii) High calorific wastes shall be used for co-processing in cement or thermal power plants.

6. Time Frame for Implementation of SWM Rules:

- a) Landfill Identification: 1 year
- b) Procurement of waste processing facilities: 2 years
- c) Ensure segregation of waste: 2 years
- d) Cities up to 1 million population: 2 Years
- e) Million plus cities: 3 years
- f) Setting up sanitary landfills: 3 years
- g) Bioremediation/capping of old landfills: 5 years

7. Review of implementation of rules at various levels:

- a) MoEF&CC, Central Monitoring Committee: Every year
- b) District Collector review performance of Local authorities: Quarterly
- c) SPCBs/PCCs review implementation of Rules with DMA: half yearly
- d) Secretary In-charge, Urban Development- State level Advisory Committee: half yearly

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the unit.

1. Explain the provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

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2. Explain the provisions of the Bio-medical Waste Management Rules, 2016.

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3. Explain the features of the Solid Waste Management Rules, 2016.

7.6 LET US SUM UP

Scientific disposal of hazardous waste through the collection, storage, packaging, transportation and treatment in an environmentally sound manner minimizes the adverse impact on public health and the environment. The hazardous waste can be disposed of through captive treatment facilities installed by the individual waste generators or Common Hazardous Waste Treatment, Storage and Disposal Facilities. Hazardous waste such as lead acid battery scraps, used oil, waste oil, spent catalyst etc. and other waste such as waste tyres, paper waste, metal scrap etc. are used as raw material by the industries involved in recycling such waste and as a supplementary resource for material and energy recovery. Accordingly, it is always preferable to utilize such waste through recycling, or for a resource recovery to avoid disposal through landfill or incineration. Unscientific disposal of hazardous and other waste through burning or incineration leads to the emission of toxic fumes comprising Dioxins and Furans, Mercury, and heavy metals, causing air pollution and associated health-related problems. Unscientific dumping of hazardous waste on land may lead to the contamination of the surface/groundwater quality, which may have severe impacts on public health and cause diseases like cancer. Hazardous Waste Management Rules are notified to ensure safe handling, generation, processing, treatment, package, storage, transportation, use reprocessing, collection, conversion, and offering for sale, destruction and disposal of hazardous waste.

Biomedical waste is medical waste, it is defined as solid waste generated during the diagnosis, testing, treatment, research or production of biological products for humans or animals. Biomedical waste includes syringes, live vaccines, laboratory samples, body parts, bodily fluids and waste, sharp needles, cultures and lancets. The main sources of biomedical waste are hospitals, medical clinics and laboratories. As per the act passed by the Ministry of Environment and Forests in 1986 & notified the Bio-Medical Waste (Management and Handling) Rules in July 1998, it is the duty of every

institution or its premises, to take all steps to ensure that waste generated is handled without any adverse effect to human health and environment. The Bio-medical Waste (Handling and Management) Rules, 1998 aim to streamline the process of waste segregation, collection, treatment and disposal.

Management of municipal solid waste involves the collection, segregation and secondary storage, transportation, treatment and final disposal of waste. Reactive, toxic, flammable, explosive or corrosive waste is called hazardous waste. Their disposal is a difficult task because they cause danger or are likely to cause danger to health and/or the environment. Municipal Solid Wastes (Management and Handling) Rules, 2000 to regulate the management and handling of municipal solid wastes. These rules shall apply to every municipal authority responsible for the collection, segregation, storage, transportation, processing and disposal of municipal solid wastes. The Solid Waste Management Rules were notified in 2016. The jurisdiction of the rules has been extended beyond the Municipal area. The Solid Waste Management Rules were notified in 2016. The jurisdiction of the rules has been extended beyond the Municipal area.

In this unit, we have discussed the key provisions of the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, the Bio-Medical Waste (Management and Handling) Rules, 1998 and the Bio-medical Waste Management Rules, 2016 and the Solid Waste Management Rules, 2016.

7.7 KEY WORDS

Environmentally Sound Management of Hazardous Wastes: Environmentally sound management of hazardous wastes means taking all steps required to ensure that the hazardous wastes are managed in a manner which will protect health and the environment against the adverse effects which may result from such wastes.

7.8 SUGGESTED FURTHER READING/REFERENCES

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Web Links

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<https://www.iwma.in/HWM%20Rules.pdf>

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https://cpcb.nic.in/uploads/MSW/Salient_features_SWM_Rules.pdf;

https://cpcb.nic.in/uploads/MSW/SWM_2016.pdf

7.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1. Please refer to section 7.3
2. Please refer to section 7.4
3. Please refer to section 7.5

UNIT 8 GENERAL LAWS AND PROGRAMMES FOR ENVIRONMENTAL PROTECTION

Environmental Policy
in Pre-independent
India

Structure

- 8.1 Introduction
- 8.2 Objectives
- 8.3 Environmental Laws
- 8.4 General Laws for Environmental Protection
 - 8.4.1 Prevention of Food Adulteration Act, 1954
 - 8.4.2 Essential Commodities Act, 1955
 - 8.4.3 Insecticide Act, 1968
 - 8.4.4 Fertilizer Control Order, 1985
 - 8.4.5 Food Safety and Standards Act, 2006
- 8.5 Programmes for Environmental Protection
 - 8.5.1 National Health Policy, 2002
 - 8.5.2 National Rural Health Mission
 - 8.5.3 National Vector-borne Disease Control Programme
 - 8.5.4 National Tobacco Control Programme
 - 8.5.5 National Programme for Prevention and Control of Fluorosis
 - 8.5.6 National Iodine Deficiency Disorder Control Programme
- 8.6 Plant Quarantine and Animal Quarantine
- 8.7 Environmental Labels
 - 8.7.1 Ecomark
- 8.8 Let Us Sum Up
- 8.9 Key Words
- 8.10 Suggested Further Reading/References
- 8.11 Answers to Check Your Progress

8.1 INTRODUCTION

Worldwide, environmental protection is at the centre stage of planning. India is no exception. Since independence, several environmental laws were framed which are directly targeted to protect human health and the environment. The laws are the system of rules which a particular country or community recognizes as regulating the actions of its citizens/members and which it may enforce by the imposition of penalties. In this unit, we would be discussing the different laws and programmes for environmental protection. Further, we would be discussing plant and animal quarantine and environmental labels.

8.2 OBJECTIVES

After studying this unit, you should be able to:

- discuss the laws and programmes for environmental protection;
- explain plant quarantine and animal quarantine;
- explain the environmental labels and Ecomark.

8.3 ENVIRONMENTAL LAWS

The major focus of “Environmental Laws” is to protect and preserve the environment for our sustainability. Law as such is a system of rules created and enforced through governmental or social institutions to regulate the behaviour of human beings. In India, the first written evidence regarding the conceptualization of environmental laws dated back to the pre-Vedic age, when the *Manusmriti* was created. In India, along the historical timeline, several proclamations and dictums related to the environment were passed by kings and rulers. During the pre-independence British era, the environmental laws for the protection of targeted habitat, domain or specific environment emerged and evolved.

8.4 GENERAL LAWS FOR ENVIRONMENTAL PROTECTION

8.4.1 Prevention of Food Adulteration Act, 1954

Food is the basic need of living organisms and its quality directly influences the health, growth and development of individuals along with society. To protect human health, the Prevention of Food Adulteration (PFA) Act was enacted in 1954. The major objectives of the PFA act are to make provision for the prevention of adulteration of food; prevent the import, manufacturing, sale and distribution of adulterated and misbranded food and ultimately prevent all types of food adulteration. Under this Act, any articles used as food or drink for human consumption (excluding drugs and water) are regarded as food. PFA act has described in detail the ambits of adulterated food. Adulterated food is those which cannot fulfil the nature, quality or substance demanded by the purchaser, contains any constituents or substances (including poisonous ingredients) which are harmful or badly affect the quality of food; addition or abstraction of any substances during processing or bad storage which badly affects the quality of food; food which is unfit for human consumption due to any filthy, putrid, rotten, decomposed or diseased animal or vegetable substance or is insect-infested or is otherwise; food articles obtained from diseased animals; food items with a higher level of colouring matter or preservatives than the prescribed limits; food with sub-standard quality or purity either causing harm to health or not etc. Under PFA Act, 1954, a “Food (Health) Authority” is constituted both at the centre and state to exercise the powers and perform responsibilities within local areas as specified and assigned by notification from time to time in the

Official Gazette. PFA Act also covers misbranded food items and it covers mainly imitated or a substitute resembling authentic food which is not plainly and conspicuously labelled to indicate its true character; false information about country or place of production or manufacturing; deviation in name with respect to food item; any modification like polishing etc. to conceal the actual or real value of food; food labels with false claims or otherwise regarding content, composition and even about the manufacturer, etc. Under PFA Act, to enforce the clause, an institutional structural and functional foundation was envisaged by setting up a central committee for food standards and a central food laboratory. PFA Act also generally prohibit the import of adulterated and misbranded food. The act also clearly mentioned the prohibition of manufacturing, sale, storage etc. of adulterated, misbranded, not in accordance to the condition of the license, prohibited food declared by Food and Health authority in the interest of public health, any article of food in contravention of any other provision of this Act or any rule made thereunder, etc. The act mentioned the power of public analysts and food inspectors. It also elaborated on the procedure to be followed by food inspectors and specified the format and content of the report by public analysts. PFA Act also entrusts manufacturers, distributors and dealers to give warranty; vendors to disclose the name etc. of the person from whom the article of food was purchased. PFA Act has provision for penalties to the person or companies, who offends the rules and simultaneously elucidates the power of the court to try cases summarily. Under PFA Act, the power of the central government for giving direction and both central and state government regarding the framing of rules are clearly described.

8.4.2 Essential Commodities Act, 1955

India after its independence and with the adoption of the Indian constitution focussed on a people's welfare-centric government. Under the control and pre-liberalised period, government wish to regulate the essential commodities, due to inadequate supply and lack of competition. A severe shortage of food during the 1950s led to an amendment in the constitution by the addition of entry No.33 to list 3 of the 7th Schedule to the Constitution in 1954. Subsequently Essential Commodities Act, 1955 was passed and came into force on 1st April 1955.

The Essential Commodities Act (ECA) is an act of the Parliament of India which was enacted to ensure the easy availability of essential commodities or products to the consumers, whose supply if obstructed owing to hoarding or black marketing by unscrupulous traders would affect the normal life of the people. The Act provides for the regulation and control of production, distribution and pricing of commodities which are declared as essential for maintaining or increasing supplies or for securing their equitable distribution and availability at fair prices. This includes foodstuff, drugs, fuel (petroleum products) etc. The list of items under the Act includes drugs, fertilisers, pulses and edible oils, petroleum and petroleum products etc. The Centre can include new commodities as and when the need arises, and take them off the

list once the situation improves. The government by a notified order can declare any commodity as 'essential' for ECA, 1955. Section 3 of the Act empowers the government to control the production, supply, distribution, trade and commerce of such commodities. The Act since its enactment in 1955 has been used by the government to regulate the production, supply and distribution of a whole host of commodities it declares "essential" to make them available to consumers at fair prices. The enforcement/implementation of the provisions of the ECA lies with the state government and Union Territory Administration.

The regulatory mechanism under ECA was through licence and permit for production, storage, transport, distribution, disposable acquisition, use and consumption of an essential commodity; moderating food grains cultivation; controlling prices; prohibiting or withholding sale of any essential commodity; fixing a certain proportion of products to be sold by the stakeholder of any essential commodity to the government; regulating and prohibiting any commercial and financial transaction in food which may be detrimental to the public interest etc. Due to several reasons, many of the ECA provisions have become irrelevant and consequently, the number of essential commodities which stood at 70 in the year 1989 has been significantly reduced to only 7. ECA also states about the penalties to be imposed in case of violation of order or under circumstances of giving false statements or furnishing false records. The offender under ECA violation shall be tried only by the special court as per the Essential Commodities (Special Provisions) Act, 1981. These Special provisions have been extended by an ordinance but have now lapsed.

Under the world trade organisation (WTO) regime and in conformity with economic liberalisation, the Department of Consumer Affairs is committed to developing a single Indian common market across the country for both manufacturing and agricultural commodity. Due to the relatively more comfortable food production situation, the government reduced restrictions like licensing of dealers, limits on stock and control on movement from time to time. The government also found that restrictions only hampered the growth of the agricultural sector and the promotion of food processing industries in rapidly changing economic scenarios and liberalisation. Now, the main focus of the ECA is to regulate mainly those commodities which are essential to protect the interest of the farmers and the large section of people living below the poverty line.

8.4.3 Insecticide Act, 1968

Insecticides are one of the important agrochemicals input for cultivation and farming for controlling and managing the insects and pests to minimise damage to the crops. Insecticide Act (IA), 1968 was enacted based on the recommendation of the Kerala and Madras Food Poisoning Case Enquiry Commission about deaths due to poisoning through the consumption of imported wheat contaminated by pesticides accidentally. The expert

Committee of ICAR headed by Prof. M.S. Thacker also thoroughly studied the whole question of pesticide use and proposed legislation during 1964-67.

The government of India passed IA to regulate the import, manufacturing, sale, transport, distribution and use of insecticides to prevent risk to human beings or animals and for matters connected therewith. Initially, the Ministry of Health and Family Planning was enforcing the ministry for IA, which was later transferred to the Ministry of Agriculture. The Act was brought into force in 1971. As per IA, insecticide includes any substance or such other substance or preparations intended for preventing, destroying, repelling or mitigating any insects, rodents, fungi, weeds and other forms of plant and animal life not useful to human beings. The Act has enlisted in detail the powers of the Central and State government.

The IA established a statutory board i.e., Central Insecticides Board under section 4. Central Insecticides Board's primary role is to advise the Central and State Governments on technical, and administrative matters within the Act and to carry out the other functions assigned to the Board by or under this Act. Also, the IA act provisioned to constitute a Registration Committee (1 chairman and maximum 5 members) for registration of insecticides after its scrutiny of their formulae and verifying claims as regards their efficacy and safety to human beings and animals made by the importer or the manufacturer, as the case may be. IA elaborates on the rules and procedures of insecticide registration. As envisaged in IA, any person desiring to import or manufacture insecticide has to apply to the Registration Committee for the registration of such insecticide and there shall be a separate application for each such insecticide. The Act has also allowed an aggrieved applicant to appeal against non-registration or cancellation. Besides that, the power of revision is also given to the central government in a case related to the registration of pesticides. A refusal to register any insecticide or cancellation of a certificate of registration of any insecticide shall be notified in the official Gazette and such other manner as may be prescribed.

Under this Act, the State government has the power to appoint "Licensing Officers" by notifying in the official gazette. The licensing officer has the responsibility of giving a license to any person for manufacturing or selling, stocking or exhibiting for sale or distribution of any insecticide. At any time, the licensing officer has the power of revocation, suspension and amendment to the licenses. Similar to the registration, an appeal against the decision of a licensing officer is provisioned under IA.

Central Insecticide Laboratory (CIL) was also established under Section 16 of the IA. The major function of the CIL is to analyze such samples of insecticides sent to it under the Act by any officer or authority and submission of certificates of analysis to the concerned authority; carry out such investigations as may be necessary for ensuring the conditions of Registration of Insecticides; determine the efficacy and toxicity of insecticides. Also, execute the responsibilities which may be entrusted to it

by the Central Government or by a State Government with the permission of the Central Government and after consultation with the Central Insecticides Board. Along with CIL, the Central and State government can appoint a person with the necessary suitable technical qualification as Insecticide Analysts for catering to a particular area or specific class of insecticides.

“Insecticide Inspectors” are ground-level investigators and enforcers of IA. They have the power to inquire, enter, search, seize etc. the offenders of the Act or rules made under the IA. If necessary, “Insecticide Inspectors” can stop the distribution, sale or use of an insecticide, if found in contravention of the provisions of IA or the rules made there under, for a specified period not exceeding twenty days. The procedure of execution of duty and responsibilities of “Insecticide Inspector” is described in IA. The rule under the IA act has made it compulsory for the person, if enquired, to divulge about the place where insecticides are manufactured or kept. In case of conviction, the insecticide stocks will be confiscated, as per provisions and guidelines under IA.

IA also prohibits the import, manufacture and sale of certain insecticides which are primarily misbranded, prohibited under Section 27 and not in accordance with IA act provisions. The IA has enlisted the types of offences, both by an individual or company and recommended punishments for the offenders. As per IA, no court inferior to that of a Metropolitan Magistrate or a Judicial Magistrate (first class) shall try any offence under this Act.

Use of any insecticide by any person for his household purposes or garden or in respect of any land under his cultivation is exempted from IA. Also, Central Government may, by notification in the official Gazette exempt any educational, scientific or research organization engaged in carrying out experiments with insecticides.

8.4.4 Fertilizer Control Order, 1985

Fertiliser is one of the important inputs for agriculture, which provides nutrients to the crops and plants for their survival, growth and development. The quality of fertiliser is directly linked to agricultural progress and it concerns millions of farmers in India. Apart from that, shortcomings in the fertilisers can also lead to a shortage of food grain production and therefore may affect all of us. The ultimate objective of the Fertiliser Control Order (FCO) is to support farmers and sustain agricultural production.

With the above foreground, Fertilizer (Control) Order (FCO), 1985 was promulgated under section 3 of the Essential Commodities Act to regulate trade, price, quality control and distribution of fertilizers. FCO is administered by the Department of Agriculture Cooperation, Government of India. FCO lays down what substances qualify for use as fertilizers in the soil, product-wise specifications, methods for sampling and analysis of fertilizers, the procedure for obtaining license/registration as manufacturer/dealer in fertilizers and conditions to be fulfilled for trading

thereof etc. Like any other Act or order, FCO has defined several terminologies related to fertilisers like fertilisers, compound or complex fertilisers, a mixture of fertilisers etc.; its forms and quality of fertilisers like granulated mixtures, grade-nutrient element contents (%) in the fertilizer, etc. It also established the "Certificate of Source" which reveals the source from which fertilizer for purpose of the sale is obtained.

Under FCO, the central government regulate the equitable distribution of fertilisers at a fair price by notifying in the official Gazette, fixing the maximum prices or rates at which any fertilizer may be sold by a manufacturer, importer, dealer, or a pool handling agency. Also, based on the situation in an area or state, the government can regulate the period of storage, differential allocation and prices of fertilisers for different classes of consumers. It prohibits the selling of fertilisers above the maximum price or rate fixed. Both Central and State governments by notification can constitute an advisory committee i.e., "Central Fertilizer Committee" and "State Fertilizer Committee" to seek advice from time to time in matters related to FCO.

FCO enforce registration of dealers of fertilisers (including a manufacturer, an importer, a pool handling agency, a wholesale dealer, a retail dealer and an industrial dealer) mandatory under and in accordance with the terms and conditions of a certificate of registration granted under clause 9. The registration procedure, its validity, revocation or refusal and renewal are also mentioned in FCO.

Similar to the registration of dealership, FCO outlines the process for registration of manufacturers of a mixture of fertilisers, condition for the grant, period of validity, refusal, renewal procedure etc. of registration certificate of the manufacturer. A registering authority or controller may suspend or cancel such certificate on specified grounds.

Ensuring the quality of fertilisers to the users is an important target of FCO. For the same, as per clause 19 of FCO, it restricts manufacture/import for sale, sell, offer for sale, stock or exhibit for sale or distribute any fertilizer or mixtures of fertilizers or which is not of prescribed standard. It prohibits the sale, offers for sale, stock or exhibit for sale or distribution of adulterated fertilisers. The non-adherence of packaging and marking of fertilisers in the manner laid down in FCO will restrict the marketing of fertilisers. FCO also specify about the specifications in respect of imported fertilizers. Manufacturers/importers and pool handling agencies have to compulsorily comply with certain requirements regarding packing and marking etc. It also envisaged requirements for laboratory facilities by manufacturers of fertilisers. FCO also regulate fertiliser quantity sale by notifying about the restriction on sale/use of fertilizers and bulk sale of fertilizers.

Like any other order or Act, FCO establishes enforcing agencies or offices or officers to implement, execute and enforce the statutory guidelines. Appointment of registering authority and inspectors along with their

qualification, powers etc. are given in FCO. Fertilizer samples are drawn periodically by fertilizer inspectors of State Governments to check their quality as per the parameters prescribed in the FCO. In the case of imported fertilizers, the fertilizer inspectors of the Central Government draw samples from ships/containers. Fertiliser samples drawn by Inspector shall analyse in accordance with the instruction contained in Schedule II (Part B) in the "Central Quality Control and Training institute, Faradized or Regional Fertilizer Control Laboratories at Bombay, Madras or Kalyani (Kolkata) or in any other laboratory notified for this purpose by the State Government by qualified fertilisers analysts. There is a clear-cut time limit for analysis and communication of results. State Governments are empowered under the FCO to take appropriate administrative and legal action against those not complying with the provisions prescribed in the Order.

In 2017, the FCO, 1955 has been amended and henceforth after its notification called as Fertiliser (Control) Amendment Order, 2017. The most important change in terms of including the words "inorganic, organic and mixed" after fertilisers in the FCO order. Also, the quality specification for Neem Coated Urea (NCU) and Neem oil utilised for the production of NCU has been amended.

8.4.5 Food Safety and Standards Act, 2006

Food is a basic requirement for the survival of any living organism, including human beings. With a growing population worldwide, especially in the developing world (including India), demand and sources of food are growing very fast. To ensure the health of the human population, there is an important need to ensure food safety, not only in terms of quantity but also good quality. Also, under liberalised economy, food safety and standards are important for the global food trade. With this background, Food Safety and Standard Act (FSSA), 2016 was framed and enacted.

The objectives of FSSA are to consolidate the laws relating to food and to establish the Food Safety and Standards Authority of India (FSSAI) for laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and matters connected therewith or incidental thereto. FSSA, 2016 is an umbrella Act which subsumed 8 older acts related to food safety like the Prevention of Food Adulteration Act (1954), Fruit Products Order (1955), Meat Food Products Order (1973), Vegetable Oil Products (Control) Order (1947), Edible Oils Packaging (Regulation) Order (1988), Solvent Extracted Oil, De- Oiled Meal and Edible Flour (Control) Order (1967) and Milk and Milk Products Order (1992). Under this Act, "Food" includes any substance, whether processed, partially processed or unprocessed, which is intended for human consumption and includes primary food to the extent defined in the clause, genetically modified (GM) or engineered food or food containing such ingredients, infant food, packaged drinking water, alcoholic drink, chewing gum, and any

substance, including water used into the food during its manufacture, preparation or treatment. The FSSA excludes from the food category any animal feed, live animals if they are not prepared or processed for placing on the market for human consumption, plants, before harvesting, drugs and medicinal products, cosmetics, narcotic or psychotropic substances, etc.

FSSA has mentioned and defined relevant terminology, which is related to food safety and its standards. The terms related to food are adulterant, contaminants, extraneous matter, food additive, infant food, infant milk substitute, ingredient, misbranded food, primary food, substance, sub-standard and unsafe food etc. Under the Act, several functionaries are also stated: Food Authority i.e., Food Safety and Standards Authority of India established under section 4, Chairperson of Food Authority, Commissioner of Food Safety (appointed under section 30), Designated Officer (appointed under section 36), Food Analyst (appointed under section 45), food business operator, Food Safety Officer (appointed under section 37), manufacturer, Food Safety Appellate Tribunal (established under section 70) etc. The major responsibilities of different functionaries are elaborated in the Act like 'food safety audit'- means a systematic and functionally independent examination of food safety measures adopted by manufacturing units to determine whether such measures and related results meet with objectives of food safety and the claims made in that behalf; risk analysis-assessment-communication and management. FSSA defined risk as the probability of deleterious impact on the health of consumers of such food and the severity of that effect, consequential to a food hazard.

Within FSSA, an autonomous body called Food Safety and Standards Authority of India (FSSAI) is established under the Ministry of Health and Family Welfare, Government of India. The most important role of FSSAI is to protect and promote public health through the regulation and supervision of food safety. The Chairperson and Chief Executive Officer (CEO) are the most important executive position of FSSAI along with 22 members. The CEO is the legal representative of the Food Authority. In India, FSSAI is only responsible for setting and prescribing standards for food. The statutory powers bestowed under FSSA to the FSSAI are framing regulations to lay down food safety standards, laying down guidelines for accreditation of laboratories for food testing, providing scientific advice and technical support to the Central Government, and contributing to the development of international technical standards in food, collecting and collating data regarding food consumption, contamination, emerging risks etc. and disseminating information and promoting awareness about food safety and nutrition in India. FSSA has also stated the terms and conditions of qualification, composition, selection, terms of office, removal etc. of FSSAI officers and other employees. The Food Authority can also establish Central Advisory Committee, Scientific Committee etc. along with their detailed procedure. FSSA documents the duties, functions, and proceedings of the Food Authority. Central Government has the power to issue directions to

Food Authority and obtain reports and returns.

FSSA highlights general principles to be followed in the Administration of Act. The Central Government, the State Governments, the Food Authority and other agencies shall be guided by principles given under the Act. The most fundamental principle is to endeavour to achieve an appropriate level of protection of human life and health and the protection of consumer interests, including fair practices in all kinds of food trade regarding food safety standards and practices. The mechanism to adhere to the principle is through risk assessment and its science-based management to prevent, reduce or eliminate that risk.

FSSA has also enumerated general provisions for food articles like food additives and processing aid; Contaminants, naturally occurring toxic substances, heavy metals, etc. and GM foods, organic foods, functional foods, proprietary foods etc. According to FSSA, no article of food shall contain any contaminant, naturally occurring toxic substances or toxins or hormones or heavy metals in excess of such quantities as may be specified by regulations. Also, the Act reflects on packaging and labelling of foods and restrictions of advertisement along with prohibition to unfair trade practices.

FSSA also regulates all imports of articles of food and enforces that no person shall import into India any unsafe or misbranded or sub-standard food or food containing extraneous matter. To ensure food safety, the Act also fixes the responsibilities of the food business operator; liability of the manufacturers, packers, wholesalers, distributors and sellers and food recall procedures. The Act also specify the guidelines regarding licensing and registration of food business.

The Food Authority and the State Food Safety Authorities are the enforcing agency of this Act. State Government appoints the Commissioner of Food Safety for the State for efficient implementation of provisions, rules and regulations of FSSA. Commissioner of Food Safety appoints "Designated and Food Safety Officers". Designated Officers can issue 'improvement notice' to food business operators and may suspend any licence forthwith in the interest of public health. Food Safety Officers operate within specified jurisdiction area of the State and have the power to search, investigate, take samples, and seize any articles of food which appears to be in contravention of this Act or the regulations made thereunder. In case of violation of the FSSA provisions and guidelines, the prosecution can be initiated based on the findings of Food Safety Officers, Designated Officers, Food Analysts and Commissioner of Food Safety.

FSSAI lays down procedures and guidelines for notification of the accredited laboratories as per ISO17025 and it can be classified as FSSAI notified NABL accredited labs, State Labs and Referral Labs. Food Analysts working in these laboratories undertake analysis of samples as mentioned under this Act. The Food Analysts are appointed by the Commissioner of Food Safety and different Food Analysts may be appointed for different articles of food.

Food Authority also provides recognition to organisations or agencies for food safety audits and checks compliance with food safety management systems. Food Safety Management System includes Good Manufacturing Practices (GMPs), Good Hygienic Practices (GHP's), Hazard Analysis and Critical Control Point (HACCP) and such other practices as may be specified by regulation, for the food business.

The FSSAI elaborates on the different types of offences like for sale or stores or selling or distributing or imports food, not of the nature or substance or quality demanded, sub-standard food, misbranded food, food containing extraneous matter, unsafe food etc. and recommends for penalties and punishments. It also provisioned penalties for misleading advertisement, failure to comply with the directions of the Food Safety Officer, and possessing adulterants. Punishment is recommended in cases like interfering with seized items, for false information, obstructing or impersonating a Food Safety Officer, carrying out a business without a licence etc.

The legal framework under FSSAI is through notification of Adjudicating Officer by the State government not below the rank of Additional District Magistrate of the district. Adjudicating Officer shall have the powers of a civil court. Central Government or State Government may establish one or more tribunals i.e., Food Safety Appellate Tribunal to hear appeals from the decisions of the Adjudicating Officer under section 68. Special courts can be notified under specified circumstances and Public Prosecutor can be appointed. The aggrieved has the right to appeal before High Court and it shall be disposed of by a bench of not less than two judges.

FSSAI in its chapter XI described the finance, account, audit and report of FSSAI or Food Authority. FSSAI has also specified in detail the power of Central and State governments to make rules, the power of Central Government to give directions to State Governments etc. FSSAI has an overriding effect over all other food-related laws.

8.5 PROGRAMMES FOR ENVIRONMENTAL PROTECTION

8.5.1 National Health Policy, 2002

Health is one of the most important factors which influences the quality of life, and life expectancy and is therefore related to the human development index (HDI) of a country. A healthy population of a nation are like an asset and an essential prerequisite for socio-economic sustainable growth and development. In India, National Health Policy was promulgated in 1983, which helped in improving discernible changes in important determinant factors relating to health like demographic (life expectancy, crude birth and death rate, IMR), epidemiological (eradication of Guinea worm) and health infrastructural parameters (number of primary health centres, hospitals, doctors per thousand persons etc.). But, the target of "Health for All by the

year 2000 AD” under National Health Policy, 1983 was assessed to be too ambitious due to several factors (mainly financial constraints). With this background, National Health Policy-2002 was promulgated to provide a boost and impetus to health sectors in India.

The main focus of the National Health Policy, 2002 is to ensure equitable access to health services across the social and geographical expanse of the country. The policy emphasized increasing the aggregate public health investment through a substantially increased contribution by the Central Government. The priority would be on preventive and curative initiatives at the primary health level through an increased sectoral share of allocation. Health being under the "State List", the contribution of the central government to the overall public health funding has been limited to about 15 per cent before the implementation of NHP-2002. NHP-2002 policy targets to increase health sector expenditure to 6 per cent of GDP in long term and at least 2 per cent of GDP contribution towards public health investment by the year 2010. By 2010, the policy also planned to increase the share of the Central Government's contribution to 25 per cent. The NHP-2002 policy affirmed to strengthen the decentralized public health services in the country and hence there is a need for infusion of substantial resources into the health sector from the Central Government Budget.

NHP-2002 envisaged an increase in the sectoral outlay in the primary health sector to reduce inequities and imbalances of health facilities and infrastructure among different regions, rural versus urban and between economic classes in the most cost-effective method. Therefore, an increased allocation of 55, 35 and 10 % of the total public health investment were planned for the primary, secondary and tertiary health sectors respectively. NHP focus on the primary health sector will facilitate affordability and accessibility of health facilities to a vast number of individuals in a cost-effective manner.

NHP-2002 envisaged the gradual convergence of all health programmes under a single field administration. Also, it underlines the key role of the Central Government in designing national health programmes with the active participation of the State Governments. The Policy envisages that autonomous bodies at State and district levels should be engaged in the implementation of the programme. The role of the State government was proposed to be limited to monitoring and technical issues of the programme. To infuse dynamism into the health sector, the multi-tasking health staff was envisaged and it was proposed that all rural health staff should be available for the entire gamut of public health activities at the decentralized level. For the same, training and re-orientation of health staff were also proposed.

NHP-2002 also described and discussed the public health infrastructure. The document reported that in large parts of India, decentralized public health service outlets have become practically dysfunctional. Due to resource constraints, the supply of drugs by the State Governments is grossly

inadequate and it was found that the unavailability of drugs also discourages patients to utilize diagnostic services and seeking the advice of the medical professionals in the public health system. Against this backdrop, the NHP envisages kick-starting the revival of the Primary Health System by providing some essential drugs under Central Government funding through the decentralized health system. To cope with the scientific advancement of health science, the policy recognized the need for more frequent in-service training for public health medical personnel like medical officers, paramedics, etc. Based on global experience about the positive relationship between the quantum of investment in the primary health sector and improved public health indices, the policy places great reliance on the strengthening of the primary health structure for the attaining of improved public health outcomes on an equitable basis by committing additional aggregate financial resources.

The NHP envisaged the means of extending public health services. For that, the need for expanding the pool of medical practitioners was proposed. It suggests for inclusion of practitioners of Indian Systems of Medicine and Homoeopathy. The policy emphasized simplification of recruitment, services/procedures, and rules of contract employment to practitioners, even outside their disciplines, as part of the basic primary health services in under-served areas. It also issued a guideline to State for making mandatory two-year rural posting before the award of a degree.

NHP-2002 laid great emphasis upon the implementation of public health programmes through local self-government institutions and also agreed to increase financial allocation for disease control programs by the Central government. The policy also introduced minimum statutory norms for health care personnel. The Policy also envisaged setting up Medical Grant Commission to set up new medical colleges and upgrade the existing infrastructure. It also emphasized the purpose of improvement of quality of medical practitioners in terms of their theoretical and practical exposure. For that, the Policy identifies need-based modification in the existing curriculum, more toward skill-oriented syllabus and practical training.

The policy focused more on increasing specialists in public health and family medicine. In the interest of patient care, the policy emphasizes the need for an improvement in the ratio of nurses vis-à-vis doctors/beds. The policy emphasized the requirement of promoting the use of generic drugs and vaccines over propriety drugs. NHP-2002 also provides support for National Programme for Universal Immunization against Preventable Diseases, by proposing not less than 50% of the requirement of vaccines/sera be sourced from public sector institutions.

NHP-2002 envisages the setting up of a two-tiered organized urban primary health care structure. The policy envisages joint funding for the urban primary health system by the local self-government institutions and State and Central Governments. NHP – 2002 envisages a network of urban-centric

trauma care networks and decentralized mental health services. NHP-2002 also delved into information, education and communication (IEC) policy. It also targets to increase in Government-funded health research programs. In principle, NHP-2002 encourage the participation of the private sector in all areas of health activities – primary, secondary or tertiary. Simultaneously, it also envisages suitable legislation for regulating minimum infrastructure and quality standards in clinical establishments/medical institutions by the private sector. NHP-2002 recognizes the significant contribution made by NGOs and other institutions of the civil society in making available health services to the community. NHP-2002 also promulgate about setting up of a national disease surveillance network. The policy also envisaged environmental and occupational health, health statistics, identification of specific programmes targeted at women's health, a contemporary code of ethics, enforcement of quality standards for food and drugs, regulation of standards for para-medical disciplines etc.

In 2017, National Health Policy (NHP-2017) was promulgated and the Policy seeks to reach everyone in a comprehensive integrated way to move towards wellness. It aims at achieving universal health coverage and delivering quality health care services to all at an affordable cost. The NHP, 2017 advocates a positive and proactive engagement with the private sector for critical gap filling towards achieving national goals. The policy aspires to provide at the district level most of the secondary care which is currently provided at a medical college hospital. The policy emphasizes reorienting and strengthening the Public Health Institutions across the country, to provide universal access to free drugs, diagnostics and other essential healthcare.

8.5.2 National Rural Health Mission

India is getting more and more urbanised with the progress of time. But the rural area is lagging in terms of infrastructure, amenities and development parameters than the urban cities. This is equally true in terms of health. With this background, to support the basic need of the rural population, National Rural Health Mission was launched in the year 2005. The NRHM is now under National Health Mission. NRHM focus on programmes to address the health needs of under-served rural areas. Based on health indicators, 18 states were initially identified under this mission. Under the NRHM, the Empowered Action Group (EAG) States as well as the North Eastern States, Jammu and Kashmir and Himachal Pradesh have been given special priority. NRHM now operates in all the States of India.

The main goals and objectives of NRHM are reduction in Infant Mortality Rate (IMR), Maternal Mortality Ratio (MMR), support for universal access to public health services like women & child health, water, sanitation, nutrition and immunisation, prevention of communicable and non-communicable diseases, promotion of healthy lifestyle, strengthen AYUSH, population stabilisation, gender and demographic balance, etc.

The main thrust of NHRM is on establishing a fully functional, community-owned, decentralized health delivery system with inter-sectoral convergence at all levels, to ensure simultaneous action on a wide range of determinants of health such as water, sanitation, education, nutrition, social and gender equality. Institutional integration within the fragmented health sector was expected to provide focus on outcomes, measured against Indian Public Health Standards for all health facilities.

The apex institutional framework of the mission in the centre is through Union Minister for Health & Family Welfare and an Empowered Programme Committee (EPC) headed by the Union Secretary for Health & Family Welfare and State Health Mission headed by the Chief Minister. The functions of the Mission would be executed through the State Health & Family Welfare Society. The intermediate district-level institutional body framed under the mission is District Health Mission (DHM) headed by the Chairperson, Zila Parishad and to support it every district will have an integrated District Health Society (DHS). It will have the District Collector as the Co-Chair and Chief Medical Officer as the Mission Director.

The NRHM envisaged bottom grassroot level workers as Accredited Social Health Activists (ASHAs) as community volunteers, which will establish a link between the community and the health system. ASHA is acting as a basic structural and functional unit of mission and fulfils the health-related demands of underprivileged sections of the population, especially women and children, who find it difficult to access health services in rural areas. The Auxiliary Nurse Midwives (ANMs) at health sub-centres, working under primary health centres guide ASHAs on aspects of health care and are regarded as the first contact person between the community and the health services. Also, the mission targets to train and enhance the capacity of Panchayat Raj Institutions (PRIs) to own, control and manage public health services. It also targets integrating vertical Health and Family Welfare programmes, developing capacities for preventive health care, promoting the non-profit sector, particularly in under-served areas etc. The core strategies of the mission are to strengthen sub-centre and facilitate their local planning and action and more importantly develop a cadre of Multi-Purpose Workers (MPWs). The mission also supports strengthening existing Primary Health Centres (PHCs) and Community Health Centres (CHCs). The mission establishes Rogi Kalyan Samiti (Patient Welfare Committee)/Hospital Management Society for community management of public hospitals. Through Village Health Sanitation and Nutrition Committees (VHSNC), the mission targets to increase their involvement with the local communities to address the needs of poor households and children.

Under NRHM, to decrease neonatal and maternal deaths, Janani Suraksha Yojana (JSY) focus on promoting the institutional delivery of babies. Reproductive and Child Health (RCH) Programme under Nation Rural Health Mission and its major component are maternal health, child health, immunization, family planning, Adolescent Health (AH) and PC-PNDT. The

RCH, launched in 2005, establishes partnerships with the state governments and is consistent with the government's National Population Policy-2000 and the National Health Policy-2001. Now, NRHM is operating under National Health Mission.

8.5.3 National Vector-borne Disease Control Programme

National Vector-borne Disease Control Programme (NVBDCP) is one of 13 national health programmes operating under the Ministry of Health and Family Welfare, Government of India. At present, the NVBDCP is an umbrella programme for the prevention and control of Vector-borne diseases mainly Malaria, Dengue, Chikungunya, Japanese Encephalitis, Kala-Azar and Filaria (Lymphatic Filariasis). The Directorate of the National Vector-borne Diseases Control Programme is responsible for framing technical guidelines, assistance, policies and assistance to the States in form of cash and commodity for the implementation of the Programme. The Directorate is also responsible for budgeting and planning the logistics pertaining to the central sector. The States are responsible for the implementation of the programme and health being a state subject, the vector-borne diseases control component works under the Directorate of Health Services with stipulated technical components. At the district level, District level offices like District Malaria Offices have been established and it operates under District Chief Medical and Health Offices by the states. At present 565 District Malaria Units are functioning in India.

The major agenda of the NVBDCP is to early diagnose with complete treatment promptly, propagate an integrated vector management system, capacity building at each level of the health care system and promote research related to vector-borne diseases and monitoring and evaluation of the programme. The strategies for prevention and control of vector-borne diseases under NVBDCP include “Integrated Vector Management”, “Disease Management” and “Supportive Intervention”. National Dengue Day is celebrated on the 16th May of each year to increase community awareness about the prevention of dengue before the onset of monsoon in India.

8.5.4 National Tobacco Control Programme

Tobacco is the product prepared from the leaves of tobacco plants (*Nicotiana* species) and it contains nicotine-a stimulant alkaloid. The use of tobacco mainly for smoking and chewing causes harm to human health and aggravate diseases related to the heart, lungs, liver etc. The alarm about the ill effects of tobacco consumption was highlighted by the World Health Organization (WHO) naming tobacco as the world's single greatest preventable cause of death in the year 2008. Globally, about 6 million people die due to tobacco use. India is the second largest producer and consumer of tobacco. In India, apart from about 0.9 million death each year due to diseases related to tobacco use, 50 % of male and 25 % of female cancer are associated with tobacco. The ramification of tobacco use is not only limited to adverse effects

on health, it also badly affects the socio-economic, and educational conditions of many families. India, being party to WHO Framework Convention on Tobacco Control (FCTC), initiated several steps to control and manage the menace of tobacco. The National Tobacco Control Programme (NTCP) was launched in 2007 - 08 under the 11th Five Year Plan under the Ministry of Health and Family Welfare (MoHFW) in 42 districts of 21 States/UT of India.

The main objectives of NTCP are awareness creation about the harmful effects of tobacco use and to facilitate effective implementation of the Tobacco Control Laws. The NTCP also targets a reduction in the production and supply of tobacco products. This is a centrally sponsored scheme for all the states. The major activities undertaken under the NTCP are organising public awareness campaigns; monitoring, evaluation and research; adviser and inter-sectoral linkages; training and capacity building of multiple stakeholders; ensuring effective implementation of the provisions made under "The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003" (COTPA); setting up and expansion of tobacco cessation centres to help people quit tobacco etc. Section-5 of the COTPA prohibits all forms of advertisement (direct/indirect/surrogate), promotion and sponsorship of tobacco products.

NTCP through State Tobacco Control Cells, District Tobacco Control programme, tobacco product testing labs, Adult Tobacco Survey (ATS) etc. work towards effective implementation of the programme. The National Tobacco Control Cell (NTCC) is responsible for overall policy formulation, planning, implementation, monitoring and evaluation of the different activities envisaged under the National Tobacco Control Programme (NTCP). Joint Secretary/Director rank in charge of MoHFW, GOI guides and supervise the NTCC activities. NTCC has developed and implemented a quarterly reporting format and therefore increases monitoring and both qualitative and quantitative enforcement of NTCP.

8.5.5 National Programme for Prevention and Control of Fluorosis

Fluorosis is a health problem caused due to excessive intake of fluoride through drinking water/food products/industrial pollutants over a long period. It results in major health disorders like dental fluorosis, skeletal fluorosis and non-skeletal fluorosis or fluoride toxicity due to its depositions in soft or hard tissues of the body. Fluorosis problem is observed worldwide and endemic to at least 25 countries, including India. In India, about 230 districts are affected due to high levels of fluoride, mostly in groundwater. Based on the extent and alarming problem of fluorosis, the National Programme for Prevention and Control of Fluorosis (NPPCF) was initiated during the 11th Five Year Plan (2008-09), to prevent and control fluorosis in the country. About 195 districts are covered under NPPCF and during the 12th Five Year Plan period

it is working under the non-communicable disease Flexi-pool of the National Health Mission (NHM).

The major objectives of NPPCF are to evaluate and utilize the baseline survey data regarding fluorosis generated by the Ministry of Drinking Water and Sanitation; integrated and comprehensive management of fluorosis in the selected areas; capacity building for prevention, and diagnosis and management of fluorosis cases.

The strategies followed under the programme **are** surveillance of fluorosis in the community; human resource capacity building; establishment of diagnostic facilities in the district; health education for prevention and control of fluorosis cases; management of fluorosis cases including supplementation, surgery and rehabilitation; health education for prevention and control of fluorosis cases.

The following activities are regularly conducted within NPPCF program like

- Community Diagnosis of Fluorosis village/block/cluster wise.
- Facility mapping from prevention, health promotion, diagnostic facilities, reconstructive surgery and medical rehabilitation point of view – village/block/district wise.
- Gap analysis in facilities and organization of physical and financial support for bridging the gaps, as per strategies listed above.
- Diagnosis of individual cases and providing its management.
- Public health intervention based on community diagnosis- behaviour change by IEC and training.

8.5.6 National Iodine Deficiency Disorder Control Programme

Worldwide, iodine deficiency disorders constitute the single largest cause of preventable brain damage. The consequences of deficiency disorders are invisible and irreversible but can be prevented. Deficiency of iodine can cause physical and mental retardation, cretinism, abortions, stillbirth, deaf mutism, squint and various types of goitres. In India, about 337 districts are affected with Iodine Deficiency Disorders (IDDs) with a prevalence rate of more than 5 %.

In light of the above facts, National Iodine Deficiency Disorder Control Program was launched in 1992, as a successor to National Goiter Control Program (1962). The specific goal of the National Iodine Deficiency Disorder Control Programme (NIDDCP) is to bring the prevalence of IDD to below 5% and ensure 100% consumption of adequately iodized salt (15ppm) at the household level. Central Nutrition and Iodine Deficiency Disorder Cell at the Directorate General of Health Services under the Ministry of Health & Family Welfare is the nodal agency for the implementation of NIDDCP. The Centre provides financial support for manpower involved in the programme at the State IDD cell and monitoring laboratory; health education and

publicity activities including global IDD day activities (each year on 21st October); for conducting district IDD survey/resurvey to assess the magnitude of IDD; procurement of salt testing kits etc.

The major objectives of the NIDDCP are to survey assessing the magnitude of IDD at the district level; supply iodized salt in place of common salt; resurveys to assess iodine deficiency disorders and the impact of iodized salt after every 5 years in the districts; laboratory monitoring of iodized salt and urinary iodine excretion; health education and publicity about iodine deficiencies and disorders and related issues.

The other relevant action taken by the government to prevent iodine deficiency and disorders is making all salts iodized since 1986 and banning the sale of non-iodized salt under the Food Adulteration Act (1954) since 2006.

8.6 PLANT QUARANTINE AND ANIMAL QUARANTINE

The dictionary meaning of quarantine is "a state, period, or place of isolation in which people or animals or plants that have arrived from elsewhere or been exposed to the infectious or contagious disease are placed. Quarantine is a state of enforced isolation. In India, Plant Quarantine regulatory measures are operative through the Destructive insects & pests Act, 1914 (Act 2 of 1914). The importance of Plant Quarantine has increased because of Globalization and liberalization in the international trade of plants and plant materials and the signing of the Sanitary and Phytosanitary (SPS) Agreement under WTO by India. International Plant Protection Convention (IPPC), 1951 agreement and guidelines are necessary to be followed for exportable agricultural commodities, while getting the phytosanitary certification. Also, International Standards for Phytosanitary Measures (ISPM) prepared under IPPC as a guiding document of the United Nations Food and Agriculture Organization's (UN-FAO) global programme of policy and technical assistance in plant quarantine should be followed for plant quarantine-related issues.

The main objective of plant quarantine is the inspection of imported agricultural commodities for preventing the introduction of exotic pests and diseases inimical to Indian fauna and flora through the implementation of the DIP Act, 1914 and the Plant Quarantine (Regulation of Import into India) Order, 2003 issued under DIP Act; inspection of plants and plant material meant for export as per the requirements under International Plant Protection Convention (IPPC) 1951 of FAO to facilitate pest free trade and detection of exotic pests and diseases for their containment by adopting domestic quarantine regulations, if introduced. Plant quarantine is enforced through the Directorate of Plant Protection, Quarantine and Storage within the Department of Agriculture, Co-operation and Farmer Welfare, Ministry of Agriculture and Farmer Welfare, Government of India. The major role and activities undertaken by the officials toward the implementation of plant

quarantine are as follows,

- i) To issue import permits with additional declarations and special conditions to facilitate safe imports of agricultural products.
- ii) To undertake quarantine inspection and laboratory testing of plants and plant material to ensure freedom from exotic pests.
- iii) To undertake phytosanitary certification (for issuance of Phytosanitary Certificates).
- iv) To undertake fumigation/disinfestations/disinfections of commodities to control infestation/infection.
- v) To undertake certification of post-entry quarantine facilities and inspection of imported growing plants and plant material.
- vi) To support Export market access for India's agriculture products from the phytosanitary point of view.
- vii) To facilitate safe global trade in agriculture by assisting the producers and exporters by providing a technically competent and reliable phytosanitary certificate system to meet the requirements of trading partners.
- viii) To provide Grants-in-aid to Designated Inspection Authorities to meet the travel expenses and also to State PSC issuing authorities for equipping them with minimal equipment required for export inspection/certification.
- ix) Approving/accreditation of treatment providers in line with the requirement of International Standards for Phytosanitary Measures (ISPM) number 15.
- x) To undertake Pest Risk Analysis (PRAs) of different agricultural commodities with respect to their import or export in relation to the countries concerned.

The Plant Quarantine Order describes various aspects and conditions of import of agricultural articles (plants and plant products) into India, like in Schedule I -points of entry for imports of plants/plant materials and other articles, Schedule IV - list of plants/planting materials and countries from where import is prohibited, Schedule VIII - list of quarantine weed species are described. In India, plant quarantine specifies standard operating procedures (SOP) like SOP for post-entry quarantine inspection etc. and National Standard for Phytosanitary Measures like Quarantine Treatments and Application Procedures. For the plant quarantine, 35 quarantine stations at different International Airports, Seaports and Land frontiers are operating in India. Plant Quarantine Information System (PQIS) disseminates information regarding quarantine-related matters.

In India, like plant quarantine, animal quarantine through Animal Quarantine and Certification Services (AQCS) is also focused on preventing the ingress of dangerous exotic diseases into the country through imported livestock and livestock products. The oldest act related to animal quarantine in India dates back to the Livestock Importation Act, 1898, which was amended in the year 2011 and enacted as Livestock Importation (Amendment) Act, 2011. The remarkable difference in the amendment act was made through the insertion of the "Livestock Product" word and it broaden the enforcement areas of animal quarantine to meat and meat products, egg and egg powders, milk and milk products, bovine, ovine, caprine, embryo, ova, semen, pet food products of animal origin etc.

The major motto of animal quarantine is to prevent the ingress of any exotic livestock diseases into India through the importation of livestock and livestock products as per the provisions of the Livestock Importation Act (Act No. IX. of 1898) as amended by the Livestock Importation (Amendment) Act, 2001 (5.7.2001) and the regulations orders and agreement on the application of Sanitary and Phytosanitary Measures (SPS) standards; to provide an internationally accepted certification service for augmenting export and to play an important role to increase international trade of livestock and livestock products; to inspect and register the plants/mills exporting the animal by-products.

For AQCS, 6 quarantine stations have been established in New Delhi, Kolkata, Mumbai, Chennai, Bangalore and Hyderabad. The animal-based laboratories like High-Security Animal Disease Laboratory (HSADL), Bhopal, National Research Centre on Equines (NRCE), Hissar, Central Disease Diagnosis Laboratory at IVRI, Bareilly, Regional Disease Diagnosis Laboratory, NABL accredited laboratories along with Veterinary colleges helps in executing AQCS.

Animal quarantine under AQCS classified and categorized livestock or livestock products as 'restricted items'- which need an import license from the Directorate General of Foreign Trade (DGFT), 'free items'- requiring a Sanitary Import Permit (SIP) from the Department of Animal Husbandry, Dairying and Fisheries and 'prohibited' in view of disease status. The export and import (EXIM) procedure under the AQCS is documented and enforced during animal quarantine. Department of Animal Husbandry, Dairying and Fisheries, Government of India has laid down standard operating procedures for animal quarantine and certification services in which protocol for entry of vehicles in quarantine area with or without animal, code of conduct for animal attender or cleaner, packaging and dispatching of samples, burials, disinfection, incineration, post-mortem, entry and exit of animals etc. are documented.

8.7 ENVIRONMENTAL LABELS

The environment has emerged as one of the most important factors influencing human beings. Worldwide, the concern for the environment is increasing day by day and people are not only aware of the environment, but also are willing to propagate the agenda of sustainability. Environmental labelling is an umbrella term that describes the various means by which companies disclose information on their environmental activities. Environmental labels are an emerging philosophy and it helps in improving environmental management to ensure long-term protection, stewardship and availability of natural resources for a nation's sustainable growth. Environment labels or Eco-labels are a voluntary method of environmental performance and certification, which identifies overall proven environmental preferences of a product or service within a specific category. The Environmental Labels help to identify the overall environmental preference of a product or service. The Eco-labelled products manifest the quality control procedures like ISO 14000 and 9000. Through Eco-labelling, environmentally friendly production processes and services are promoted which saves water, phases out toxic and hazardous chemicals and optimizes material utilization and recycling. Environmental labelling also helps in improving the quality of the product and therefore increases the export market potential of the eco-labelled products.

The manufacturers generally need to follow the principles of Eco-labeling as per ISO 14020. It encompasses

- i) accurate, verifiable, relevant and non-deceptive declarations;
- ii) scientific methodology-based declarations;
- iii) life cycle-based declaration;
- iv) promote innovation for improved environmental performance;
- v) consensus with interested parties on environmental declarations; and
- vi) availability of information concerning the procedure, methodology, and any criterion used to support environmental declarations to all interested parties.

By meeting the above criteria, the companies can position their products as 'green' products. Consumers, government agencies, certification agencies, non-governmental organizations and manufacturers are having an important role in different entities in eco-labelling implementation in India.

8.7.1 Ecomark

Ministry of Environment and Forest, Government of India, through a resolution launched the eco-labelling scheme known as 'Ecomark' in 1991. The scheme will promote the labelling of environment-friendly products and will operate on a national basis to provide accreditation and labelling for household and other consumer products, which meet certain environmental

criteria along with quality requirements of the Indian Standards. The main aim of the Ecomark scheme is to create awareness among consumers towards identifying environmental-friendly products. An environment-friendly product is a product which is made, used or disposed of in a way that significantly reduces the harm it would otherwise cause the environment. The criteria follow a cradle-to-grave approach, i.e., from raw material extraction to manufacturing, and disposal. The 'Ecomark' label is awarded to consumer goods which meet the specified environmental criteria and the quality requirements of Indian Standards. Any product with Ecomark will be the right environmental choice.

The major targeted objectives of the scheme are:

- i) To provide an incentive for manufacturers and importers to reduce the adverse environmental impact of products.
- ii) To reward genuine initiatives by companies to reduce the adverse environmental impact of their products.
- iii) To assist consumers to become environmentally responsible in their daily lives by providing information to take account of environmental factors in their purchase decisions.
- iv) To encourage citizens to purchase products which have less harmful environmental impacts.

The ultimate objective is to improve the quality of the environment and to encourage the sustainable management of resources.

The Ecomark to a product is granted after facing the three important stages i.e.,

- 1) A steering committee under MoEF determine the product categories for coverage under the scheme and also formulates strategies for promotion, implementation, future development and improvements in the working of the scheme.
- 2) Technical committee by Central Pollution Control Board (CPCB) - to identify the specific product to be selected and the individual criteria to be adopted, including, wherever possible, inter se priority between the criteria if there be more than one.
- 3) Bureau of Indian Standards - to assess and certify the products and draw up a contract with the manufacturers, allowing the use of the label.

Any product which qualifies to get "Ecomark labels" must fulfil the following criteria like substantially less polluting potential, recyclable, saving non-renewable resources and reduction of the adverse primary criteria with minimum harmful environmental impact in comparison with other comparable products in production, usage and disposal.

The logo of Ecomark is an “earthen pot” which symbolizes the use of a renewable resource like earth, which does not produce hazardous waste and consumes little energy in making. It puts across its environmental message and the image can reach people to promote a greater awareness of the need to be kind to the environment.

Check Your Progress 1

Note: i) Use the space given below for your answers.

ii) Check your answers with those given at the end of the unit.

1. Write a short note on the Prevention of Food Adulteration Act, 1954.

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2. Write a short note on Essential Commodities Act, 1955.

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3. Write a short note on National Rural Health Mission.

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4. Write a short note on plant quarantine.

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5. Write a short note on environmental labels.

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8.8 LET US SUM UP

The present unit has primarily discussed the important laws and programmes linked to the environmental protection of India. In this unit, we have discussed different laws and programmes for environmental protection; plant and animal quarantine and environmental labels.

8.9 KEY WORDS

Insecticide: Insecticide includes any substance or such other substance or preparations intended for preventing, destroying, repelling or mitigating any insects, rodents, fungi, weeds and other forms of plant and animal life not useful to human beings.

Health: Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

8.10 SUGGESTED FURTHER READING/REFERENCES

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Sahasranaman, P.B. (2012). *Handbook of Environmental Law* (Second Edition). Oxford University Press.

8.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1. Please refer to section 8.4.1
2. Please refer to section 8.4.2
3. Please refer to section 8.5.2
4. Please refer to section 8.6
5. Please refer to section 8.7

