

ENVIRONMENTAL STUDIES

LECTURE-23

Different types of Pollution

Environmental Pollution occurs in different forms; air, water, soil, radioactive, noise, heat/ thermal and light. Every form of pollution has two sources of occurrence; the point and the non-point sources. The point sources are easy to identify, monitor and control, whereas the non-point sources are hard to control.

Toxic environmental pollution affects more than 200 million people worldwide, according to Pure Earth, a non-profit environmental organization. In some of the world's worst polluted places, babies are born with birth defects, children have lost 30 to 40 IQ points, and life expectancy may be as low as 45 years because of cancers and other diseases.

Air Pollution

It is the most prevalent and dangerous form of pollution especially considered to go hand in hand with urbanization. There are many reasons to it. Primary among these is the excessive fuel combustion which has become a basic necessity for cooking, transport and other industrial activities. This releases umpteen no. of chemicals to the air which are far from being removed from it. These are directly affecting our existence.

Smoke releases SO_2 into the air making it toxic. It is caused mainly due to chimneys, factory stacks, vehicles or something as common as 'burning of wood'. Release of SO_2 and other greenhouse gases into air causes global warming and has capacity to cause acid rain. Global warming or emission of these gases has increased temperatures, erratic rains and droughts worldwide. This has heavily increased the cases of Asthma, Bronchitis and the more dangerous lung cancer, mainly in the metro cities.

Air pollution is believed to end lives of over 20 lakh people every year – a study, published in the journal Environmental Research Letters, says.

One of the major and unfortunate examples of what can air pollution lead to is the Bhopal Gas Tragedy of 1984. It was a direct result of release of

methyl isocyanate gas at Union Carbide plant in Bhopal. It killed over 2,000 people, and over 200,000 suffered respiratory problems. An irritant (e.g. particulates less than 10 micrometers) may cause respiratory illnesses, cardiovascular disease and increases in asthma. Even today there are birth defects in the babies borne, which are believed to be because of the tragedy..

Water Pollution

Every living being depends, directly, on water so this has taken a heavy toll on the entire living population. Other than direct dependencies, more than 60% of the species live in some form of water. Thus water pollution is another major type of pollution that needs to be curbed.

It can be attributed to many factors -industrial effluent dumped into the rivers and sea causes a huge imbalance in the water properties which renders the water bodies unfit for aquatic lives. Water pollution is also a major cause of diseases caused to the non-aquatic species.

Insecticides, pesticides which are sprayed on the plants, pollutes the ground water system and oil spills in the oceans have caused irreparable damage to the water bodies. Eutrophication is another big source; it occurs due to daily activities like washing clothes, utensils near lakes, ponds or rivers; this forces detergents to go into water which blocks sunlight from penetrating, thus reducing oxygen and making it inhabitable.

According to National Oceanic and Atmospheric Administration (NOAA), 80 percent of the pollution in marine environments comes from the land through sources such as runoff. Water pollution can severely affect marine life. For example, sewage causes pathogens to grow, while organic and inorganic compounds in water can change the composition of the precious resource. According to the EPA, low levels of dissolved oxygen in the water are also considered a pollutant. Dissolved oxygen is caused by the decomposition of organic materials, such as sewage introduced into the water.

Water pollution not only harms the aquatic beings but it also contaminates the entire food chain by severely affecting humans dependent on these. Water-borne diseases like cholera, diarrhoea have also increased in all places.

Soil pollution

Also known as Land Pollution, this occurs due to incorporation of unwanted chemicals in the soil due to human activities. Use of insecticides and pesticides absorbs the nitrogen compounds from the soil making it unfit for plants to derive nutrition from. Release of industrial waste, mining and deforestation also exploits the soil. Since plants can't grow properly, they can't hold the soil and this leads to soil erosion.

Food is a big contributor to landfill waste. Up to 40 percent of food produced in the United States is trashed each year, according to the Natural Resources Defense Council.

Commercial or industrial waste is a significant portion of solid waste. According to the University of Utah, industries use 4 million pounds (1.8 million kg) of materials in order to provide the average American family with needed products for one year. Much of it is classified as non-hazardous, such as construction material (wood, concrete, bricks, glass, etc.) and medical waste (bandages, surgical gloves, surgical instruments, discarded needles, etc.). Hazardous waste is any liquid, solid or sludge waste that contain properties that are dangerous or potentially harmful to human health or the environment. Industries generate hazardous waste from mining, petroleum refining, pesticide manufacturing and other chemical production. Households generate hazardous waste as well, including paints and solvents, motor oil, fluorescent lights, aerosol cans, and ammunition.

While the above three are most common forms of Pollution that we hear about, there are few other forms of Pollution that have seemed to grow at an alarming pace these days. Let us briefly look at what they are.

Noise pollution

It is caused when a noise which is of higher intensity than 85 db reaches our bare ears. It may lead to psychological problems like stress & hypertension. It can also lead to permanent hearing impairment, which is worse. It is mainly caused by loud pumps and compressors in the chemical industries. Even marriage functions and rock music concerts are often ignored contributors to this type of pollution.

Radioactive pollution

This is considered one of the most dangerous pollution because of its permanent effects. An unarrested upset in a nuclear plant , careless nuclear waste disposal, etc. It can cause cancer – skin, blood, infertility due to exposure, birth defects and blindness; It has the ability to permanently change soil, air and water – the major sources of life. It can even cause mutation in species which can propagate for ages.

Thermal/heat pollution: This is caused as a result of excessive heat release in the environment. This leads to irreversible and undesirable changes of almost permanent nature. Industries and Vehicles are direct contributors to this. Deforestation is an indirect contributor. Other than the greenhouse gases, zyada this has increased the earth's temperature, and has potential to cause drastic climatic changes; and wildlife extinction.

Light pollution

Whenever illumination available is more than what's required in an area, this pollution kicks in. It is more noticeable in big cities, on advertising boards and billboards, mainly during large scale events, vis-a-vis Concerts, sport events & even mariiages, at the night. It mainly affects the astronomical observations by making the stars very difficult to observe & study.