

B.A 4th semester

Paper-4016

**Environmental geography and
disaster management**

- **SOIL POLLUTION**

- With the rise of concrete buildings and roads, one part of the Earth that we rarely see is the soil. It has many different names, such as dirt, mud, and ground. However, it is definitely very important to us. The plants that feed us grow in soil, and keeping it healthy is essential to maintaining a beautiful planet.
- However, like all other forms of nature, soil also suffers from pollution. The pollution of soil is a common thing these days, and it happens due to the presence of man-made elements.
- The main reason why the soil becomes contaminated is due to the presence of man-made waste. The waste produced from nature itself, such as dead plants, carcasses of animals and rotten fruits and vegetables only adds to the fertility of the soil. However, our waste products are full of chemicals that are not originally found in nature and lead to soil pollution.

• **Main Causes of Soil Pollution**

1. Industrial Activity

- Industrial activity has been the biggest contributor to the problem in the last century, especially since the amount of mining and manufacturing has increased. Most industries are dependent on extracting minerals from the Earth.
- Whether it is iron ore or coal, the by-products are contaminated, and they are not disposed of in a manner that cannot be considered safe. As a result, the industrial waste lingers in the soil surface for a long time and makes it unsuitable for use.

2. Agricultural Activities

- The utilization of chemicals has gone up tremendously since technology provided us with modern pesticides and fertilizers. They are full of chemicals that are not produced in nature and cannot be broken down by it. As a result, they seep into the ground after they mix with water and slowly reduce the fertility of the soil.

- Other chemicals damage the composition of the soil and make it easier to erode by water and air. Plants absorb many of these pesticides, and when they decompose, they cause soil pollution since they become a part of the land.

3. Waste Disposal

- Finally, a growing cause for concern is how we dispose of our waste. While industrial waste is sure to cause contamination, there is another way in which we are adding to the pollution. Every human produces a certain amount of personal waste products by way of urine and feces.
- While much of it moves into the sewer system, there is also a large amount that is dumped directly into landfills in the form of diapers. Even the sewer system ends at the landfill, where the biological waste pollutes the soil and water. This is because our bodies are full of toxins and chemicals which are now seeping into the land and causing pollution of soil

4. Accidental Oil Spills

- Oil leaks can happen during the storage and transport of chemicals. This can be seen at most of the fuel stations. The chemicals present in the fuel deteriorates the quality of soil and make them unsuitable for cultivation. These chemicals can enter into the groundwater through the soil and make the water undrinkable.

5. Acid Rain

- Acid rain is caused when pollutants present in the air mix up with the rain and fall back on the ground. The polluted water could dissolve away some of the essential nutrients found in soil and change the structure of the soil.

Devastating Effects of Soil Pollution

- Soil influences almost all aspects of our daily lives. Sometimes we fail to understand it. As a result of this, we sometimes fail to understand the effect that soil pollution has on our daily lives. Polluted soil means stunted crops or even toxic underground water table. Some major effects of soil pollution are listed below.

1. Effect on Health of Humans

- Considering how soil is the reason we are able to sustain ourselves, the contamination of it has major consequences on our health. Crops and plants that are grown on polluted soil absorb much of the pollution and then pass these on to us. This could explain the sudden surge in small and terminal illnesses.
- Long term exposure to such soil can affect the genetic make-up of the body, causing congenital illnesses and chronic health problems that cannot be cured easily. In fact, it can sicken the livestock to a considerable extent and cause food poisoning over a long period of time. The soil pollution can even lead to widespread famines if the plants are unable to grow in it.

2. Effect on Growth of Plants

- The ecological balance of any system gets affected due to the widespread contamination of the soil. Most plants are unable to adapt when the chemistry of the soil changes so radically in a short period of time. Fungi and bacteria found in the soil that bind it together begin to decline, which creates an additional problem of soil erosion.
- The fertility of the soil slowly diminishes, making land unsuitable for agriculture and any local vegetation to survive. The soil pollution causes large tracts of land to become hazardous to health. Unlike deserts, which are suitable for its native vegetation, such land cannot support most forms of life

3. Decreased Soil Fertility

- The toxic chemicals present in the soil can decrease soil fertility and therefore decrease in the soil yield. The contaminated soil is then used to produce fruits and vegetables, which lacks quality nutrients and may contain some poisonous substance to cause serious health problems in people consuming them.

4. Toxic Dust

- The emission of toxic and foul gases from landfills pollutes the environment and causes serious effects on the health of some people. Besides, the unpleasant smell causes inconvenience to other people.

5. Changes in Soil Structure

- The death of many soil organisms (e.g., earthworms) in the soil can lead to alteration in soil structure. Apart from that, it could also force other predators to move to other places in search of food.

6. Poisoning of the Underground Water Table

- Soil pollution also leads to the poisoning of the underground water table. Since this water is stored beneath the layers of the soil, the toxins in the soil could easily percolate slowly and steadily into the water table.

• **Possible Solutions to Soil Pollution**

- Soil pollution is a complex problem that ought to be solved. It is essential that we all realize how important soil is for us. The earlier we realize, the better we will be able to solve the problem of soil pollution. It is a complex problem, and thus, it requires everyone, from an individual to the government, to work in complete unison. Listed below are a few things that could help in reducing soil pollution.

1. Reduced Use of Chemical Fertilizers

- Chemical fertilizers do more harm than good. While proper amounts could enhance the fertility of the soil, excess of it actually poisons the soil. The excess of chemical fertilizers could pollute the soil in several ways. It could mess with the pH levels of the soil
- It could also destroy the good microorganisms in the soil. Not only that, but the runoffs from such soils also cause water pollution as well.

2. Reforestation and Afforestation Should be Promoted

- One of the major causes of soil pollution is soil erosion that is caused due to deforestation. It is natural that with the ever-growing population, the humankind needs more and more space to expand their civilization. Often it is achieved at the cost of the health of the soil. To prevent this from happening, reforestation of a deforested area should be promoted.
- Also, afforestation should be promoted in the barren lands. The roots of the plants bind the soil particles together and even capture good microorganisms in the soil. It also ensures the maintenance of the underground water table.

3. Recycle and Reuse Products

- These steps not only reduce waste generation but also ensure that soil pollution is reduced. At present, plastic forms a significant portion of the generated wastes. More often than not, these wastes are buried in landfills.
- In these landfills, these plastics and other materials decompose slowly and release toxic materials into the soil. These toxic substances are very harmful to the health of the soil and are a major source of soil pollution.
- By reusing and recycling things, we would ensure that lesser wastes are dumped in these landfills, and this, in turn, would reduce soil pollution.

4. Get the Locals Involved

- In order to ensure that a problem like soil pollution is solved, it is essential that every individual must get involved. It is with their involvement that things can work out better. Awareness programs could be designed so that people understand soil pollution better. If people are aware, they will help even subconsciously.

5. Promote Use of Natural Manure

- Natural manure is one of the best sources of nutrients for the soil. It is harmless and completely organic. It adds essential nutrients to the soil and restores the health of the soil. It has no harmful by-products that could harm the soil or the environment in any way.
- Source-Environmental geography, Savindra Singh