



ENVIRONMENTAL POLLUTION IN THE SOIL OF KORBA

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ABSTRACT

Environmental pollution is the mixture of contaminants, which causes adverse effects into the natural environment. In the present study the TDS content in the soil samples were analysed. The Result revealed the degree of pollution levels in the Korba City. From the analytical data of physico-chemical and selected metallic elements, the conclusion has come the soil of study field was contaminated by the presents of excess amount of undesirable chemicals.. All the soil samples showed large difference in the minimum and maximum values of many parameters indicating contamination due to mining activities in uneven manner

Keywords: Environment, Pollution, Soil, Korba,

1. INTRODUCTION

Environmental pollution is the mixture of contaminants, which causes adverse effects into the natural environment. The causes of environmental pollution are: Lack of policies to control pollution, unplanned industrial growth, use of outdated technologies, presence of large number of small scale industries, inefficient waste disposal, leaching of resources from our natural world. Industrial developments are the main cause of environment pollution. Coal and oil become the predominant sources of energy as industry spread across the world. The release of CO₂ as from various industrial sources is a key cause of global warming.

The first main source of industrial pollution is the production of electricity. In coal burning power plants fly ash is the byproduct of burned coal. Nuclear waste is the another source of industrial pollution. Outside of energy production all factories produces some form of pollution. Heavy metals are produced as a result of metal refining. Environmental pollution hurts the environment in various ways:-

1.1 Soil pollution

The soil pollution is caused by the presence of industrial wastes. Some of the most common soil contaminants are Chlorinated hydrocarbons (CFH) heavy metals (such as Chromium, Cadmium found in rechargeable batteries and Lead found in Lead paint, aviation fuel and still gasoline, Zinc Arsenic and benzene.

1.2 Water pollution

it is caused by dumping of industrial wastes into water ways, improper containment of waste, which causes leakage into groundwater and waterways.

1.3 Air pollution

Air pollution is caused by the substances present in the air that can have adverse effects on humans and the ecosystem. The substance can be solid particles, liquid droplets or gases. In mining areas the soils are affected by various coal mining operations, ie. Storage of over burden dump materials, Blasting, drilling, construction of ancillary facilities, cleaning of lands and movement of vehicles, by these operations various wastes are released. Korba city is the power Capital of India. It is abound in minerals like Bauxite, Coal etc. SECL is one of the most profitable coal companies under the flagship of Coal India limited. many important mines are situated in Korba district. Coal based thermal power plant namely NTPC, LANCO, BCPP, CSEB-East, CSEB-West. LANCO, generate more than 4500 m.w. of electricity. The Gevra Project in Korba district is the largest opencast mine in India. The Korba has been categorized in top five under most critically polluted. (Web sources: MSN 2010).

3. METHODOLOGY

In the present study the TDS content in the soil samples varied from 600 to 1500. In the present study the Organic Carbon content in the soil samples varied from 19% to 2.13%. The availability of Nitrogen in the soil represents a fraction of the total nitrogen absorbable by plants. Soil Nitrogen exists in three general forms ie: Organic Nitrogen, compounds Ammonium, Ions and nitrate Ions. Several researchers reported that nitrogen may enter the soil through rainfall, plant residues, and nitrogen fixation by soil organisms, manures and commercial fertilizers. In the present study available nitrogen were found to be ranged 190 to 400Kg/ha in different sampling sites. Available Sulphur in the soil refers to mainly SO₄, Sulphur exchangeable and water soluble Sulphur and a small fraction of organic Sulphur. In the present study the observed amount of available sulphur were founds 30.2 ppm to 84.5 ppm, the Manganese varied from 0.394 to 4.425, the Zinc varied from 0.304 to 4.313, the Copper varied from 0.122 to 2.842.

2. RESULT

In order to obtain the various kinds of pollutant in soils of Korba, I have taken extensively analysis of soils in context of physico-chemical and selected metallic elements. For this aim ,I have selected five sampling locations in Korba and adjoining areas. The results were obtained for Moisture, pH, EC, TDS, OC, N, S, Mg, Ca, Mn, Zn ,Cu.

Moisture content indicates the water amount in the soil, which may vary with time. The moisture content in the selected soils were found to be ranged from 4.65% to 19.33% moisture content of soil was found lower due to presence of rocky mass material, rise in tempter and vice versa, and higher indicating well for normal growth of plants. All the soil samples showed acidic in nature, can be attributed to oxidation of pyrite particles in the soil sample . The lower pH causes problems for normal growth of the plants.

Electrical conductivity is the most common measure of soil salinity. It is also indicate the ability of an aqueous solution to carry electric current. The water soluble salts in the soils consist of various action and anions. These salts when present in optimum concentration, the serve as nutrient to growing plants, but when present in excessive amount ie- $EC > 4$ ds/m in the soil is said to be saline , which is harmful to the plant growth. The injurious effects of high salt concentration on plant growth are mainly due to high osmotic pressure of soil solution which results an exosmosis and plamolysis which inhibits the uptake of water and nutrients by plants. During study period E.C. were found in most of samples to be ranged 0.04 m mhos/Cm were due to upward migration of different salts with spontaneous combustion of coal particles in sampling sites. Whereas the lower values observed might be due presence of lower amount of salts in the soil samples.

4. DISCUSSION

All human activities are based on the land which is scarce natural resources in our country. Nevertheless it has been observed that millions of people world-wide are deprived of this soils are continuously polluted by natural process such as weathering of soils and rocks, anthropogenic activities like domestic wastes, municipal sewage, Agricultural runoff and industrial effluents. Exceeding concentration of metallic elements are causes of health hazardous for flora-fauna and human beings, which are entered in soil through over mineralization, improper use of agriculture chemicals, pesticides, use thermal power conducting etc. I have observed in the study areas, the soils are degraded quality. In the study area most of soil reveals acidic nature, low organic carbon content lower amount of nitrogen then prescribed limits use for Agriculture, which gives negative impact on agriculture. Due to highly acidic soil, impaired absorption of Calcium, Magnesium ,Manganese, Zinc, Copper has been found, which has reported many time greater than normal limits as prescribed by the soil monitoring agencies (SHC, ASI), often in toxic proportions.

5. CONCLUSION

The Result revealed the degree of pollution levels in the Korba City. From the analytical data of physico-chemical and selected metallic elements, the conclusion has come the soil of study field was contaminated by the presents of excess amount of undesirable chemicals. The TDS [1100 mg l^{-1}], pH [5.78], Sulphur content [55.56 mg/kg] and Metallic elements Mn [1.78 mg/kg], Zn [1.45 mg/kg], and Cu [6.61 mg/kg] have been found beyond the desirable ranges the inferred of this study, the soil is highly polluted and not fit for the agriculture purpose. All the

soil samples showed large difference in the minimum and maximum values of many parameters indicating contamination due to mining activities in uneven manner

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