ENVIRONMENTAL STUDIES

ENVS PROJECT

Raniganj Girls' College

Course Name: Environment Studies

Course Code: AEE101

Topic of the project: Different aspects of Air, Soil, Water, Noise pollution

A Project Report

Submitted by Semester-I students (Academic Year 2021-22)

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CERTIFICATE

This is to certify that this project titled "Different aspects of Air, Soil, Water, Noise pollution" submitted by the students for the award of degree of B.A. Honours/ Program is a bonafide record of work carried out under my guidance and supervision.

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Introduction*

China is the world's largest producer of coal and a major Consumer of Coal. China's coal recoverable reserves are the third largest in the world. The Coal industry has become an important foundation for the rapid development of the national economy. China's Coal Situation in China's natural resources, the basic characteristics are rich coal, poor Oil and gas, which determine the important position of Coal in primary energy.

In the process of Coal mining, groundwater is exposed to Coal Seams, rock formations, and human activities, resulting in Significant water quality characteristics of the Coal industry. Usually Containing a large amount of Suspended Solids, and poor Sensory properties, Some are highly mineralized or acidic, and even Contain radioactive elements and Oxides. If they are directly discharged, the formed acidic waters will flow into the rivers or infiltrate into the underground, which will pollute the water Source, Causing the death of large-Scale Vegetation. The polluted water will spread to the farmland and easily lead to Soil infertility. Declining, Silting up the rivers, and forming Serious eco-logical and Social problems, the ecological environment is Seriously deteriorated.

At present the annual mine water discharge in china is 4.5 billion Cubic meters, and the utilization rate is 43.8%, which is far lower than

the standard of 80% in developed countries. Industrial production and mining will lead to a sharp decline in the groundwater level, and there will be leakage areas in the mining area and adjacent cities, which may lead to ground collapse and seawater intrusion.

Therefore, in order to ensure the sustainable development of coal resources, it is necessary to take relative measures for the prevention and treatment of polluted water in coal mining. In the process of coal mining, resources cannot be exploited at the expense of massive destruction and waste of water can be reused for production water, urban greening, agricultural irrigation, and drinking water in the mining area, so as to further realize the resource utilization of mine water, optimize the coal production and environment, and rationalize water resources. Development has a virtuous circle.

Characteristics and classification of Mine Water pollution*

2.1 Mine Water Characteristics :- Mine water is the same as the general groundwater before it is polluted. The lithology and water conservancy conditions of the aquifers determine its water quality characteristics. The PH of the mine water is mostly neutral to weakly alkaline. If the mineralization is low, the toxic content is generally below the detection limit. In the process of coal mining face and roadway, it is artificially affected. The rock powder, coal powder, and other organic matter are mixed into the water. If the water is polluted, then it is grayish black in colour, and contains a large amount of suspended impurities and a certain amount of microorganisms.

Mine water in mine production is brought together in various ways, and mining and ore dressing water account for the largest proportion. The main sources of mine wastewater are as follows:-

① Open-pit mine wastewater:- Wastewater formed by mining production process, acidic water discharged from waste rock pile after dissolution of waste rock pile after rainfall.

② Mine wastewater:- mainly production-contaminated groundwater in the process.

22. Mine Water Classification :- The general principles of mine Sewage treatment and reuse are: Clean and diversion, Sewage and diversion, classification and treatment, and quality and reuse. Mine drainage is divided into three main Categories: dewatering water, water in the goaf, and underground Sewage in the mine.

Draining water: draining water in Coal mines refers to the wastewater that is generated underground due to the formation Structure in the Coal mining.

Water in the goaf: after long- term mining, the Coal mine will easily form a goaf. The goaf needs timely measures. No water will accumulate in these goafs. If no measures are taken, the generated water will be mined. The process creates water hazards and Safety issues

Mine underground Sewage: in Coal mining Operations, Coal-based aquifers will be naturally drained, and these waters will merge into the bottom of the well to form mine water. Due to the different types of Coal, the main pollution Characteristics of mine water are also different, mainly divided into: Clean mine water, Suspended mine water, acidic mine water with acid pollution, high Salinity mine waters, and Special Contaminated mine water. The quality of clean mine water is good, the PH is generally neutral, with low turbidity and hardening degree.

2.3. Environmental Hazards of Mine Water :- Mine Water

classified according to the main pollution characteristics, except for the four types of mine water other than clean mine water, has different levels of pollutants. It corrodes the surface through which the flow passes, and the larger the flow area, the larger the corrosion surface. In addition, the water temperature of groundwater will also be affected by mine water. For example some large mining areas are affected by mine waters, and the hydrological underlying surface of the basin is destroyed, resulting in water-level decline, dry ground cracks, soil erosion, etc. It will further lead to ground collapse, seawater intrusion, and other disasters. Mine water containing pollutants flows into the river. On the one hand, it is difficult to recycle and it will destroy the ecological balance, pollute the water body, reduce the potential of the farmland near the river to be cultivated, and destroy the vegetation. On the other hand, the base flow is reduced. and the rivers are transformed into seasonal rivers, eventually forming a situation in which the time and space of the basin are unevenly distributed.

The suspended solids particles contained in the suspended mineral water are prone to be hydrated with water molecules, which not only forms a hydrated film in the water but also hinders the aggregation of particles, and also keeps the particle in a dispersed state.

Causes of water pollution

Industrial Waste :- Many industries dump industrial waste, such as hazardous chemicals, into bodies of water before treatment. It eventually pollutes the water. The dumping of hazardous substances reduces the oxygen levels in the water, resulting in pollution.

Pathogens :- Pathogens, or disease-causing bacteria, are among the most serious contaminants. Bacteria, viruses, and protozoa are the most common pathogens. Although most bacteria are considered innocuous, if not beneficial, a few dangerous bacteria infiltrate water bodies via sewers and sanitation systems.
Water-borne microorganisms cause a variety of illnesses, including diarrhoea, gastraintestinal sickness, and others.

Sewage :- One of the primary causes of water pollution is the disposal of sewage in bodies of water. Sewage discharged into the sea from both houses and industry can pollute the ocean. Sewage disposal causes a variety of water-related illnesses, including diarrhoea, which is a leading cause of death in children.

Radioactive Waste :- Disposal of radioactive wastes into the sea is another major source of water pollution in today's globe.

Heavy metals such as mercury, lead and cadmium as well as Solvents from industries, pesticide run-off, and oil spills from ships, are examples of chemical pollutants. They are toxic to aquatic life forms, causing infertility and death. Metal wastes are also hazardous to people when they are absorbed into our bodies. They can harm the brain System, kidneys, and other organs.

Dumping of Solid waste :- Human littering is another important Source of water Contamination. Dumping Solid trash such as plastics, card board, and Styrofoam Contaminates water and renders it unfit for human Consumption. The dumping of Solid trash in large quantities clogs water bodies and causes pollution.

Organic Waste :- Food trash, detergents, leaves, grass, and other Organic pollutants are examples of Organic water pollutants. They are caused by residential Sewage, discharge from food processing plants, and farm wastes, which pollute water Sources by run off. Bacteria do, in fact, Convert Complex Organic Stuff into basic Organic matter. They eat Oxygen that has been dissolved in waters. The number of decomposers rises as the Organic waste content of the water increases. They use a lot of oxygen, resulting in a decrease in the oxygen Concentration of water. This harms aquatic life.

Types of water Pollution*

1. Ground Water pollution :- During the rain, pesticides and chemicals applied to crops and soil are washed deep into the earth. Pesticides combine with ground water, polluting it.

2. Surface water pollution :- when hazardous chemicals come into touch with various sources of water, they pollute the surface water. Harmful pollutants from different sources combine or dissolve in lakes, lagoons, and seas, resulting in surface water contamination.

3. Microbial pollution :- This form of water contamination is caused by microorganisms. Although the majority of microorganisms are innocuous, certain bacteria and viruses can cause significant health issues.

4. Suspended Matter pollution :- pollutants enter the water and do not interact with the water molecules in this pollution. As a result, the suspended particles in water settle to create silt on the waterbed. Because of this, nutrients from the water were lost, causing it to become contaminated.

Effects of water pollution

1. Affects Aquatic Life :- Water Contamination has a Significant impact on aquatic life. It affects their metabolism and behaviours, as well as causing disease and death. Dioxin is a toxin that causes a variety of issues ranging from reproductive issues to uncontrolled cell development and cancer. This chemical accumulates in fish, poultry, and meat. Chemicals like these make their way up the food chain before entering the human body.

2. Affects Food chain :- water contamination may have a Significant influence on the food chain. It upsets the food chain. Cadmium and lead are two hazardous chemicals that enter the food chain via animals and can continue to disturb at greater levels.

3. Groundwater Contamination :- Pesticides and fertilizers used in agricultural production pollute groundwater as well as our ecology. If this groundwater is directly delivered to our home via bore-wells or tube-wells, it will cause a multitude of health issues.

4. Affects Human Health :- Pollution affects humans, and faecal matter in water sources can cause illnesses such

as hepatitis. poor Drinking waters treatment and Contaminated water can always lead to an epidemic of infectious illnesses like cholera.

5. High TDS in water :- water is the best Solvent Since it quickly dissolves a wide range of Compounds. TDS in drinking water Should be less than 500mg/litre. The presence of a high level of TDS in water can Cause a Variety of health issues in humans.

Control of Water Pollution

Dispose of Toxic chemicals properly:- House hold Solvents, pesticides, and cleaners might not seem that bad. But, bleach, paint, paint thinner, ammonia, and many chemicals are becoming a serious problem. Many household chemicals can be recycled

Plant Some Trees:- Trees reduce erosion that washes pollution into the water and reduces erosion, you can also volunteer your time in a local tree-planting effort. If you own land along a river or pond, plant trees, bushes, or grass along the bank.

Cut Down On Meat Consumption:- Raising animals for meat takes lots of water for the grains and other foods they need, as well as to keep them alive. Further, the antibiotics and solid water waste both tend to end up in groundwater and riverss.

Report water polluters:- Many cases of illegal waste disposal and other forms of water pollution go unreported and often aren't cleaned up. Report people who pour oil in storm drains, toss bags of trash in a stream, and so on.

5. Dispose of Medical waste properly :- Never flush Medicines down the toilet, and never dump them in the nearest pond or creek. The drugs tend to accumulate in the waters, and in fish and other wildlife. Hormones and water compounds end up causing a variety of health problems in fish and birds and contaminate drinking water that people and livestock use.

Support Environmental charities :- No matter where you live in the country, there are going to be charities working on watershed protection, water pollution cleanup, and similar causes. Find an Organization that's active in your area and make a donation every year. your support may even lead to expanded anti-pollution work.

Conclution*

Water pollution Stems from many Sources and Causes, Only a few of which are discussed here. Riverss and Streams demonstrate Some capacity to recover from the effects of certain pollutants, but lakes, bays, ponds, Sluggish riverss, and Oceans have little resistance to the effects of water pollution. We have a long history of introducing pollutants into aquatic environments, and have had only partial Success at repairing the damage that has already been done. Curbing the activities that result in environmental degradation. Nonpoint Source pollution Continues to be a Serious threat to receiving waterss, as does the Continued release of Sewage and industrial effluents throughout the world. As we have Seen with mercury Contamination in fishes, environmental pollution Can have widespread and lasting consequences.

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Nidhi Tursi