KAZI NAZRUL UNIVERSITY

RANIGANJ GIRLS COLLEGE

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CLASS :- B.A (SEMESTER-I)

SUB :- E.V.S

ROLL :- 432

SESSION :- 2021-22

PROJECT SUBMITTED TO :- MOUMITA PAL MAAM.

Signature of the teacher.

Raniganj Girls' College

Course Name: Environment Studies

Course Code: AEE101

Topic of the project: Water 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 "Water 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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Place: Raniganj

Date: 18.03.2022

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Assistant Professor, Department of Zoology

Signature of the supervisor with designation and department

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REGISTRATION CERTIFICATE

This is to certify that SWETA SINGH

Son/Daughter of DILIP KUMAR SINGH

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is registered as a student of this University,

His/Her registration number is 113211210247 *of* 2021-22

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Topic - Water Pollution in Raniganj City

ABSTRACT

Aim:— The aim of the study was to Monitor the water quality of ten pitlakes which were located in Raniganj coal fieldarea. West Bengal for three successive seasons January 2020 to February 2021.

Methodology:— In this study physicochamical parameters of water sample were analyzed following standard method statistical analyses were used to indicated the role of each parameter.

Result:— Significant positive correlation was noted within in hardness and chloride the nature of the pitlakes is generally alkaline. A mean value of PH765 were recorded which ranged between 6.70 and 9.10 during the study period significant variation found among other parameters of pitlakes. PCA reveals three most important and key influential parameters hardness chloride and Nitrate Nitrogen content of pitlake water.

Conclusion :— This observation indicates that mine water differ in its composition with seasonal changes and having capability to change their nature with time.

Key words :— Water quality pitlakes. Raniganj coal field physico-chemical characters.

INTRODUCTIONS

The opencast coal extractions method in one of the best and appropriate in the mining industries of India resulting into a void or pit which is eventually filled up by surface runoff and ground water seepage becoming a pit lake, the potential water reserviour in India, Coal is a major resource and important primary source of energy. Coal mining activates changes practically different sectors of our enviroment. The major enviromental impacts on the surrounding areas and on human health are well documented

by several authors in different in different times (Dhar, 1993, Ripleyetal, 1996. peoples and Edmonds, 2002 younger 2004, paletal 2003)

Pit lakes have unique physical property than other water body. Nevertheless, pitlake waters often constitute a vast resource but of limited beneficial use (due to water quality issues); with apontential to contaminate regional surface and ground water resources their value as resources for recreation, fisheries, water supply and wild life habitat depends mostly on their topography their safety pitlake may have long-term benefits area water source for industrial activities rather than relying on natural systems several records were available on the assessment of the water quality of different pitlakes in India.

Thus quality assessments of selected pit lakes in RCF has been carried out during 2014. 2015 in order to assess the present hydro logi-cal conditions, bio-practile and efficacy to evalve strategies

for an ecological restoration, conservation and Management.

MATERIALS AND METHODS

Study area :— Raniganj coalfield in the birth place of coal mining in the country. Area of Raniganj coalfield in 1530 Km^2 spreading over Burdwan, Birbhum, Bankura and purulia Districts in West Bengal and Dhanbad District in Jharkhand Heart of Raniganj coalfield (RCF) is however, in Burdwan District bounded by Ajoy River in the North and Damodar River in South on the basic of geographic distribution and use pattern 10 pit lakes were selected for studying the physico-chemical properties of their water selected for studying the post-monsoon, comprising the three principal seasons of a year.

Solid Waste :— The improper disposal of solid waste is a mayar source of water pollution. Solid waste includes garbage, rubbish etc. Atomic waste, sewage, and construction and demolition waste, all of which are generated by individual, residential, commercial institutional and industrial activities. The problem is espacially acute in developing countries that may lack infrastructure to resources or regulation to limit improper disposal. In some places solid waste in intentionally dumped into bodies of water. Land pollution in inland bodies of water can also eventually make their way to the ocean. Solid waste pollution is unsightly and damaging to the health of aquatic ecosystems and can harm wild life directly. Many solid wastes, such as plastics and electronics waste, break down and leach harmful chemicals into the water, making them a source of toxic or hazardous waste.

Toxic waste :—— Waste is considered toxic if it is Poisonous, radioactive, explosive, care ingenic (causing cancer), Mutagenic (causing damage to chromosomes), Teratogenic (causing birth defects or bio accumative (that is increasing in concentration of the higher ends of food chains) source of toxic chemicals include. improperly dispose of waste water from industrial plants and chemical process facilities (lead, Mercury, chromium) as well

Types and sources of water pollutants :—— Water bodies can be polluted by a wide variety of substances, including pathogenic Micro organisms, putrascible organic waste, fertilizers and plants nutrients, toxic chemicals, sediments, heart petroleum-oil and radioactive substance several types of water pollution are considered below. (For a discuss of the handling of coverage and other forms of waste produced by human activities see waste disposal and solid-waste management.)

Water pollutants come from either point sources or dispersed sources. A point source is a pipe or channel, such as those used for discharge from an industrial facility or a city sewerage system. A dispersed (or non point) source is a very broad unconfined area from which a variety of pollutants enter the water body. such as the run off from an agricultural area. point sources of water pollution are easier to control than disposal sources because the contaminated water has been collected and conveyed to one singh point where it can be treated pollution from disporsal sources is difficult to control continue to cause a large fraction of water pollution problems.

Domestic sewage :— Domestic sewage is the primary source of pathogens and putrescible organic substances because pathogens are excreated in paces, all sewage from cities and towns is likely to contain pathogens of some type, potentially presenting a direct threat to public health. Putrescible organic matter poresents a different Natuarally in the sewage off by bacteria and other microganisms, the dissolved

oxygen content of the water is depleated. This endangers the quality of lakes and streams, where high levels of oxygen are required for fish and other aquatic organisms ~~of oxygen are~~ to survive. Sewage threatment processes reduce the levels as surface run off containing pesticides used on agricultural areas and suburban lawns (chlodane, dieldrim, heptranlar) (for a more detailed treatment of toxic chemicals see paion and toxic waste.)

Sediment :—— Sediment resulting from soil erosion or construction activity can be carried into water bodies by surface run off. Suspended sediment interferes with the penetration of sun-light and upsets the ecological balance of a body of water. Also, it can disrupt the reproductive cycle of fish and ~~water~~ other forms of life, and when it stelles out of suspension it can smother bottom dewelling organisms.

growths known as algal blooms when the algae die, oxygen dissolved in the water declines because microorganisms use oxygen to digest algae during the process of decomposition. Anaerobic organisms then metabolize the organic wastes, ~~and~~ producing gases such as methane and hydrogen sulfide, which are harmful to the aerobic (oxygen-requiring) forms of life. The process by which a lake changes from a clean clear condition with a relatively low concentration of dissolved nutrients and a balanced aquatic community - to a nutrient-rich, algae filled state and thence to an oxygen-deficient waste filled condition is called eutrophication is a naturally occuring slow, and inevitable process. However when it is accelerated by human activity and water pollution (a phenomenon called cultural eutrophication) it can lead to the premature aging and death of a body of water.

Water sample analysis :— Water samples were collected from 10 pit lakes in premonsoon, mono- ~~using standard~~ soon and post - monsoon season during 2021 - 2022 using standard protocols and guidelines. The value of each parameter was expressed as mean with standard deviations in the results.

Tests for physicochemical parameter of water sample were performed by following standard Methods given by American public Heath Association (APHA, 2005) and Black (1965).

Statiscal analysis :— Statical analysis were performed using the statical Package XLSTAT (Addinosoft 2010) rrraphs are drawn using Sci DAvis 1.005 (Benkarted. al. 2014) of path ogens and organics in waste water but they do not eliminate them completely Domestic sewage is also a magar source of plants Nutrients, mainly nitrates and phosphates. Excess nitrates and phosphates in water promote the growth of algae, sometimes causing on usally dence and rapid.

DISCUSSION :—— Variation of physicochemical parameters of lakes of Ranigang found with their mean value. Similar findings were also reported by PCA reveals three most important and key influencial become lake water. parameter are positevely correlated that indicate their effect on water quality Hierarchical cluster - respect to their physicochemical parameter. These may be due to the site specific complex hydrological and biological interactions which naturally occur in these ecosystems.

CONCLUSION :—— Based on the result of present studies of the lake of Ranigang area it can be Concluded. That water quality show a prominent change in their quality. It revealed that all pitlakes changes with seasonal Variation. Such changes were found in PH, Conductivity Alkalunity, Hardness, chloride Nitrate Nitrogen and phosphate also.

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Thanks You

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