



KAZI NAZRUL UNIVERSITY

Environmental Studies Project

Title of the project : - WATER POLLUTION IN RANIGANJ CITY

Submitted By -

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Raniganj Girls' College

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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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REGISTRATION CERTIFICATE

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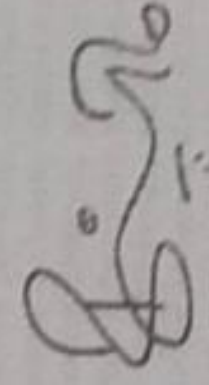
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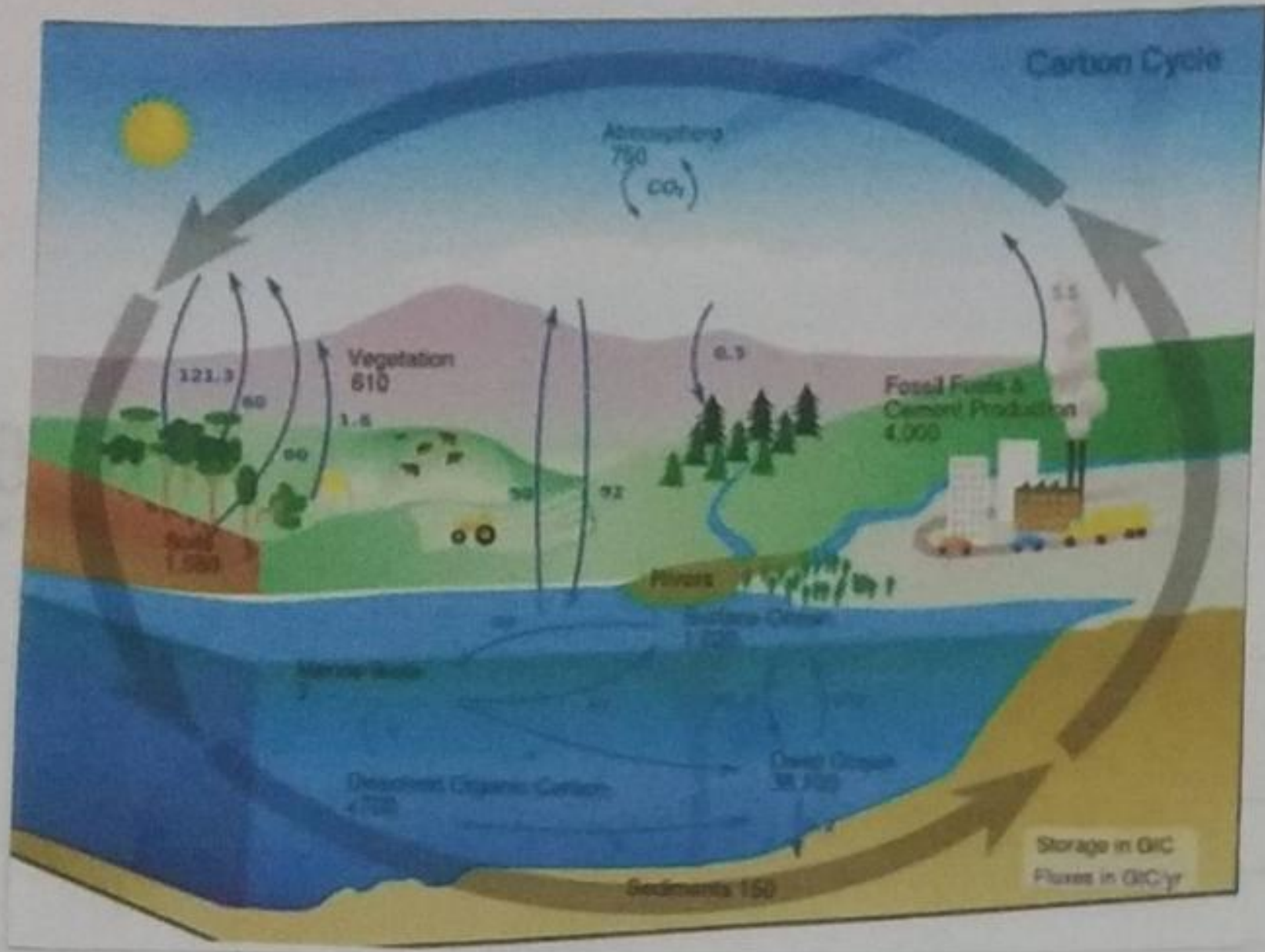
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WATER POLLUTION
IN
RANIGANJ CITY

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■ Bio-geo chemical cycle



■ Water Pollution

Introduction :-

Beside atmosphere, life supporting and life sustaining element is the hydrosphere. It covers more than 75 per-cent of the earth's surface either as oceans (salt water) or as fresh water and also includes sea, rivers, lakes, ponds, streams etc. Most of the fresh water with salt content of 0.2%, which can be useable is found either in lakes and ponds or in rivers and streams. Hydrosphere also contributes a significant role in our bio-geochemical Cycle of the ecosystem. Water is essential to all life. Life was first originate in water.

Pollution of Water is the presence of some foreign organic, inorganic, biological, radiological or physical substances in water. These substances contaminate the water by degrading its quality, which may cause health hazards or decrease the utility of water.

Some substances like industrial poisons, toxic chemicals and pathologic organisms pollute the water even at very low concentrations. Some pollutions occur naturally in the form of soil erosion, deposition of animal wastes and fallen leaves, solution of minerals in water etc. Much of it is the direct result of human activity.

Definition of Water Pollution :-

According to the scientific definition given by Southwick (1976), "The physical, chemical and biological changes of our natural water wealth reach such a stage at which it becomes unfit for human consumption then the water is said to be polluted".

According to Southwick (1976) water may be polluted in two ways. As- Due to presence of fertilizers and sewage, biotic communities flourish very quickly and the water is polluted.

Toxic chemical substances of water kill the biotic communities and hence also water is said to be polluted.



☑ Sewage Pollution .

Causes of Water Pollution :-

Water can be polluted by different means —

Sewage :- A main source of pollution is the discharge of huge quantities of raw or partially treated sewage which consists of the excreta of animals and it is also rich in organic matter and nitrogen compounds and toxic substances.

For that, it increases the biological productivity, kill useful organisms and interferes with many uses of the water body by damaging biological activity.

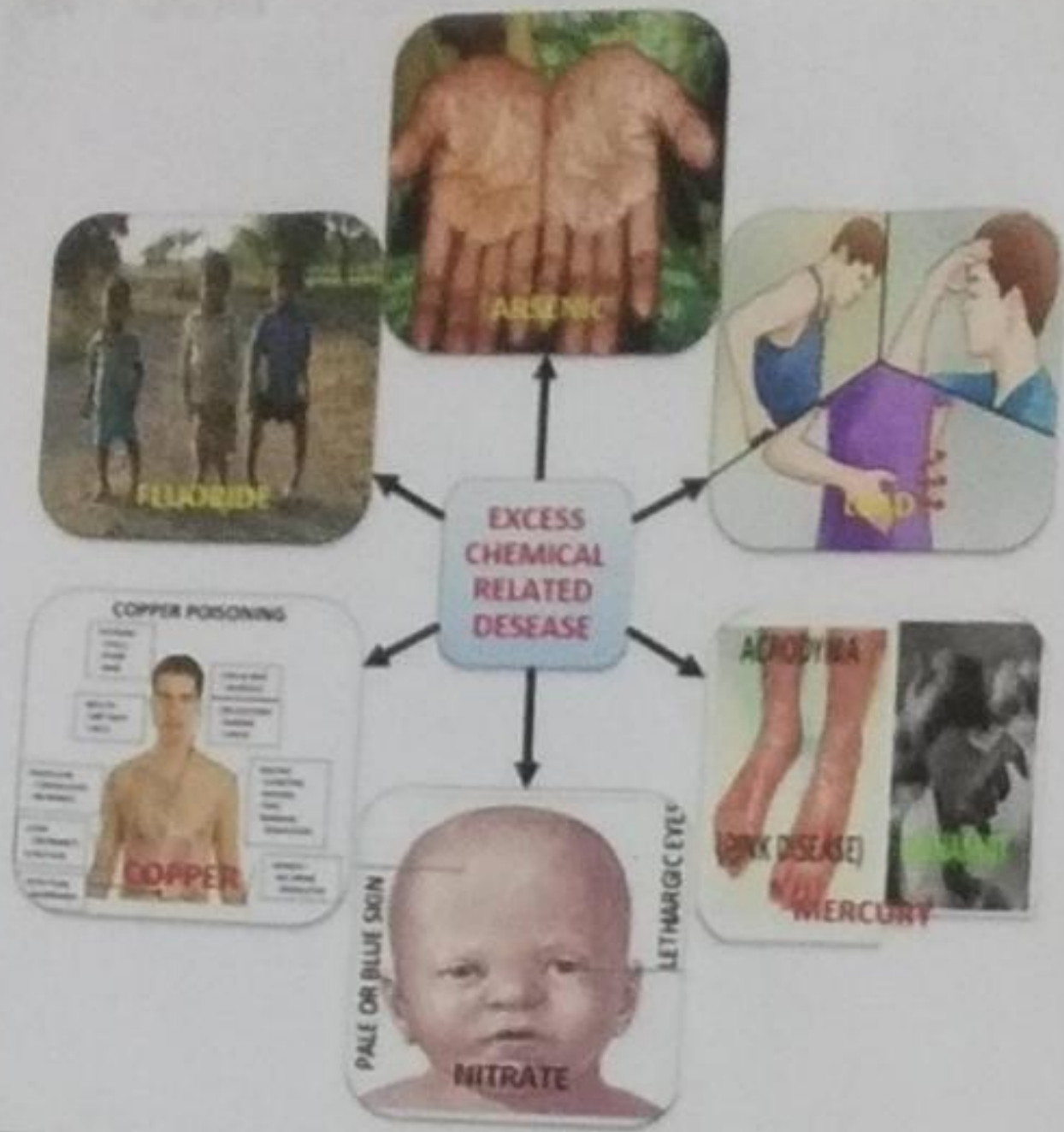
Industrial and Radioactive Wastes :-

Industrial wastes containing highly toxic chemicals like — Cd, Cr, Cu, Pb, Ni, Hg, causing many severe diseases, like — itai-itai, Minamata, are being released to the water body directly or indirectly. Beside that, many radioactive isotopes, like — Cs, Sr, I escape to water reservoirs and water bodies, which can cause cancer, organ abnormalities.

Oil Pollution :- Oil, a major pollutant in the sea, spills from the tankers of the ships and it pose serious threat to marine animals and phytoplanktons.

Fertilizer Pollution :- As a result of adding large amount of inorganic fertilizers to crop fields, the chemical substances leached to the water bodies with a heavy quantity. This may increase the growth of algae, known as algal bloom and eutrophication and also can accumulated in animal bodies and humans, caused many diseases.

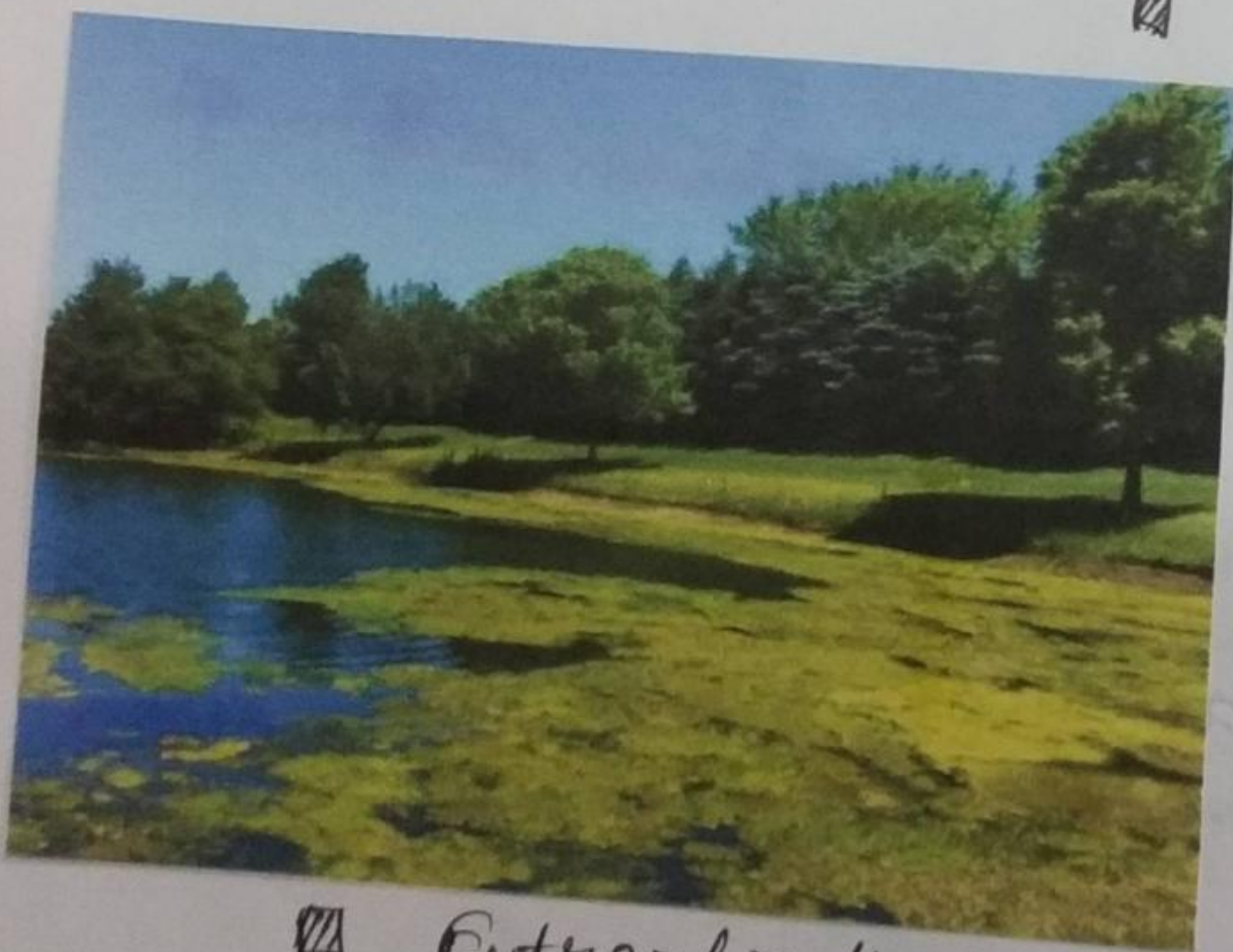
Mining Wastes :- Mining causes water pollution in the form of acid drainage from coal mines, debris and saw weeds from hydromining methods.



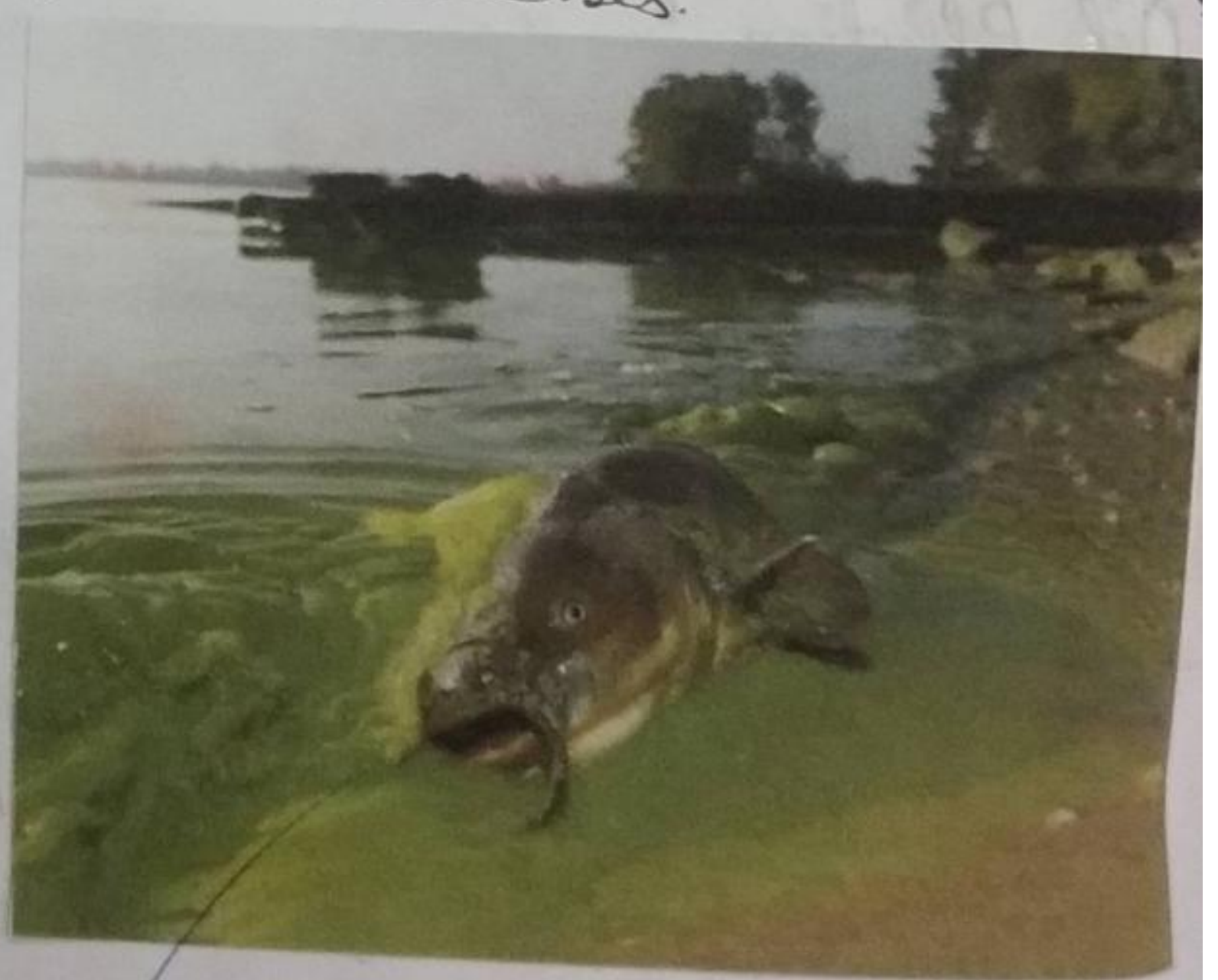
Blue baby syndrome, fluorosis.



Infectious diseases.



Eutrophication.



dead fish for algal bloom

Effects of Water Pollution :-

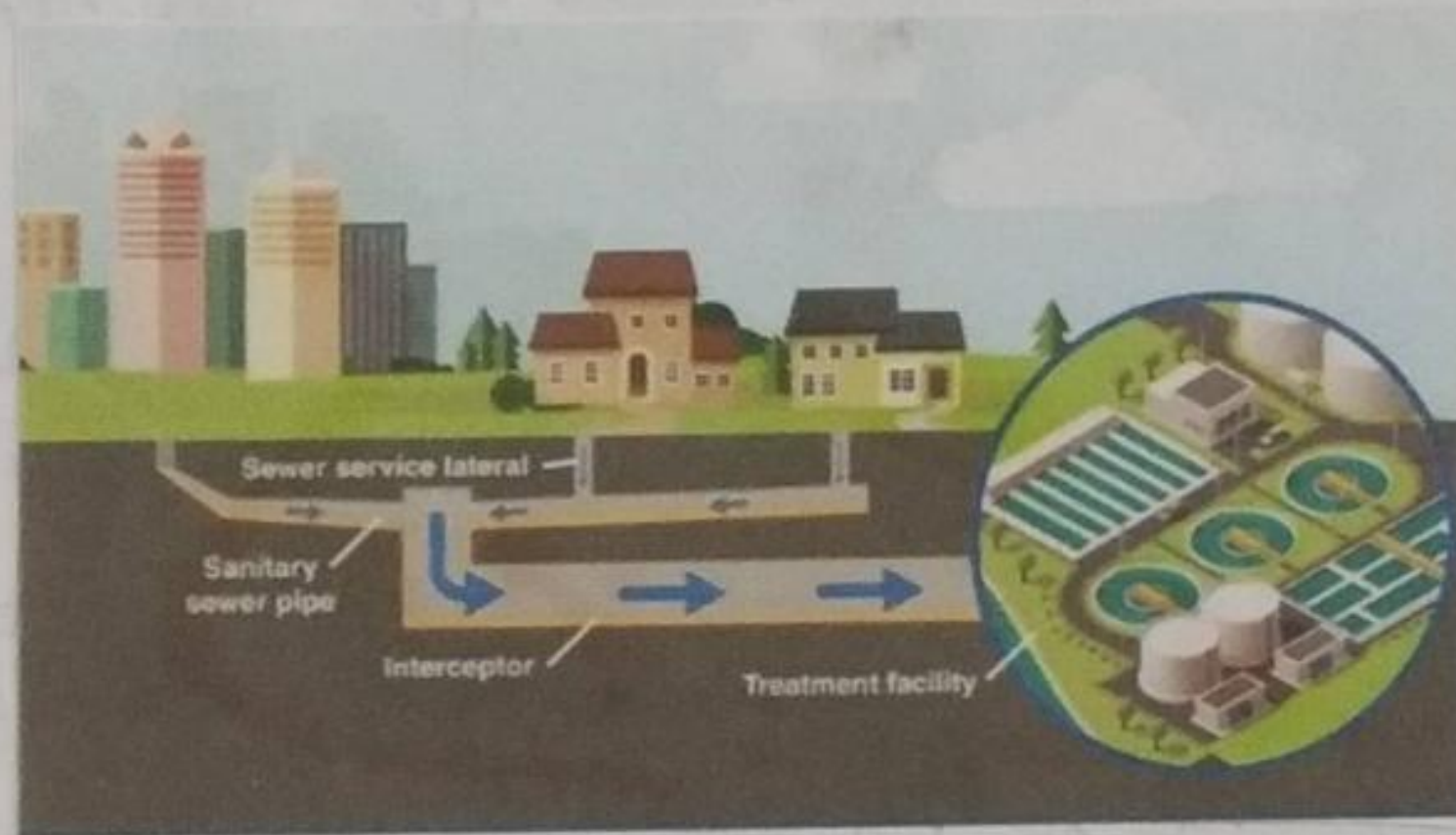
Diseases :- In humans, drinking or consuming polluted water in any way has many disastrous effects on our health. It causes typhoid, cholera, hepatitis, dysentery and other various diseases. Along with these fluorosis, Arsenicosis may occur for accumulation of arsenic, fluorine in a heavy quantity from the water bodies. Vomiting, nausea, muscle spasm, problem in the bones, diarrhoea can be seen as the symptoms of these diseases.

Eutrophication :- Chemical accumulation and infusion in the water body encourages the growth of algae. The algae form a layer on the top of the water body. Bacteria feed on this algae and this event is known as algal bloom. It decreases the amount of oxygen in the water body. It is severely affecting the aquatic life.

Effect on food-chain :- Fumoil in food chain happens the aquatic animals (fish, prawns) consumes the toxins and pollutants in the H_2O and then the human consume them. Thus, many diseases may also grow in human body, like - blue baby syndrome, stomach cancer, etc.

Effects of Water Pollution

Water pollution is the contamination of water bodies. This includes surface water and groundwater. Contaminants can be natural or man-made, and can include a wide range of substances such as chemicals, nutrients, and pathogens. The effects of water pollution can be severe, including harm to aquatic life, degradation of ecosystems, and threats to human health. For example, drinking water contaminated with heavy metals or chemicals can cause serious health problems. Additionally, polluted water can contribute to the development of harmful algal blooms and other environmental issues.



Sewage treatment

Sewage treatment is the process of removing contaminants from wastewater and effluent. This process typically involves several stages, including primary treatment (removal of large solids), secondary treatment (biological processes to break down organic matter), and tertiary treatment (removal of nutrients and other fine particles). The treated effluent is then discharged into water bodies or reused for irrigation. Sewage treatment is essential for protecting public health and the environment from the harmful effects of untreated wastewater.

Prevention and Remediation of Water Pollution :-

The best way to prevent large scale water pollution is to try and reduce its harmful effects.

we can protect ourselves from a future of water scarcity. There are numerous remedies by which

Judicious use of agrochemicals, like - pesticides and fertilizers which will reduce their surface run-off and leaching. Use of these on sloped lands should be avoided.

Use of nitrogen fixing plants to supplement the use of fertilizers.

Prevent run-off of manure. Divert such run-off to basin for settlement. The nutrient rich water can be used as fertilizer in the fields.

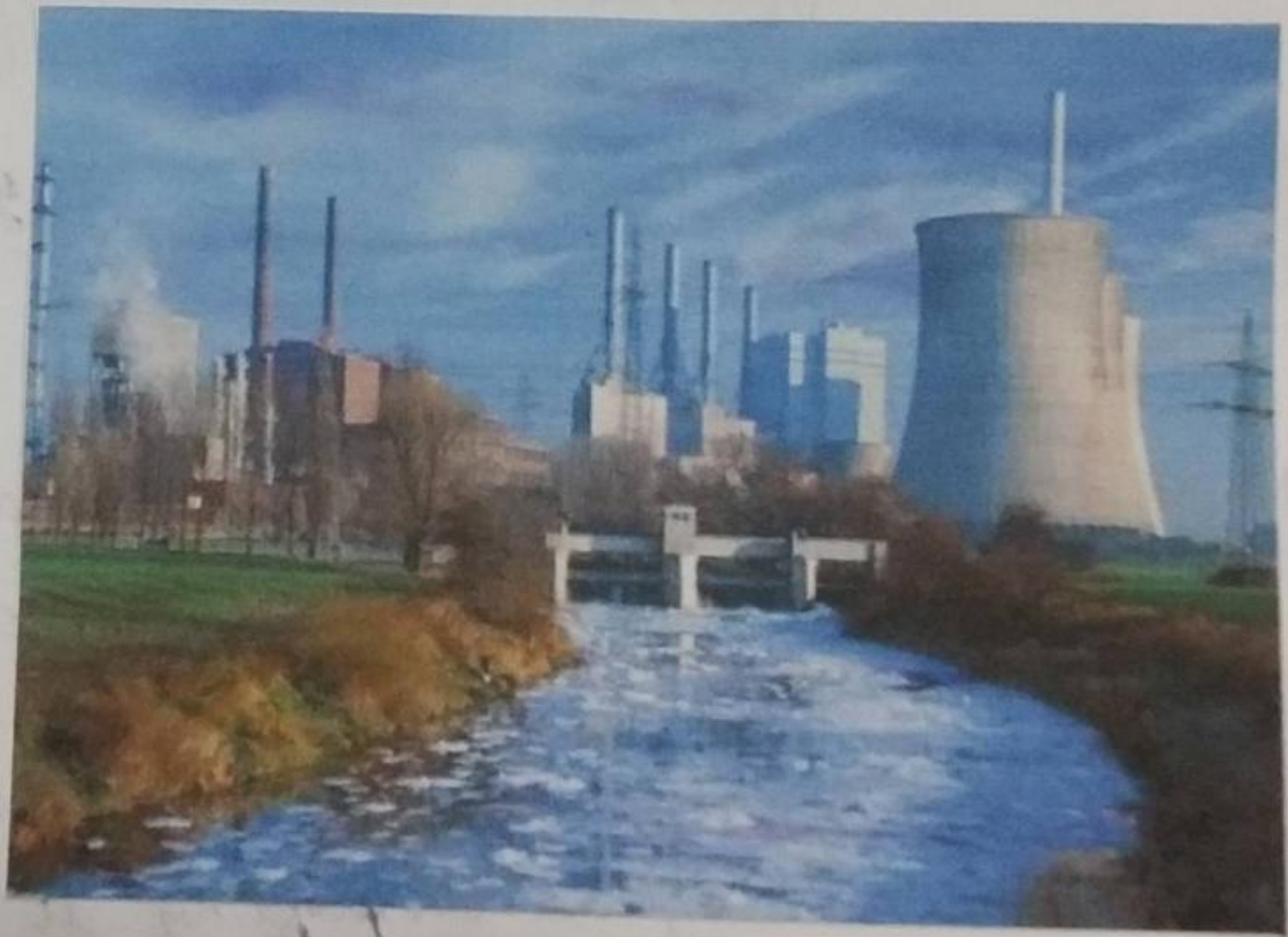
Planting trees would reduce pollution by sediments and will also prevent soil erosion.

Separate drainage of sewage and the rain water should be provided to prevent overflow of sewage with rain water.

Sewage treatment should be done by means of chemical and microbial treatment before depositing it in water bodies directly. Otherwise, this waste can be used in agricultural or other industrial purposes by reducing its toxic contents.



■ Plastic Pollution.



■ Industrial waste.

Water Pollution in Raniganj City :

The city of Raniganj has been grown up by centering the oldest coal mine area of India. Everyday, so many people are coming here for their survival, livelihood and making this city their permanent habitat. So, Raniganj city has a big number of population around 129,441. As a severe result of this huge population density, Raniganj has detected a dangerous rate of many types of pollution. Among many of it, the water pollution is making its foot bigger and bigger day by day. It can be proven by many ideal examples. Some of them are —

- the ponds and lakes full with plastic trashes.
- dump of industrial wastes on the running water streams.
- Openly amassed mostly untreated sewage in the water bodies by flow of drainage or in other ways.

The following points of water pollution are elaborated here —

Plastic Pollution :- Especially in urban areas of Raniganj city, people are mostly dependent on the polymer based things in their daily lives, although the grievous effect of using these plastics is known by all of them. Not only that, these used plastics are directly thrown to the ponds, lakes and other water bodies. Thus the sunlight and oxygen supply is blocked by these materials, soon the living organisms will be dead and also that water will be unusable for the mass.



▣ Domestic waste



▣ Sewage Pollution.

:- In Raniganj city, there are many factories. But sponge-iron factory is notable as it contributes a leading role in water pollution in such an extensive manner. The unfiltered industrial waste, containing many heavy metals and toxic elements has been released directly in the Damodar river, which flows encompassing Raniganj area. The affect of this matter can be assumed as the water of this river is used as a main source of drinking water for the population of the whole city.

Sewage Pollution

:- It is very normal that there will be a gigantic quantity of garbage and debris especially sewage, as the city of Raniganj has a bountiful number of population. There is no arrangement or scheme for the treatment of the sewage. Thus, that sewage will be dumped in the water streams in a habitual way. So, eventually the toxins of the sewage will be accumulated in human body and in other organisms by means of drinking and consuming food. Finally, it will affect on the ecosystem.

: Acknowledgement :

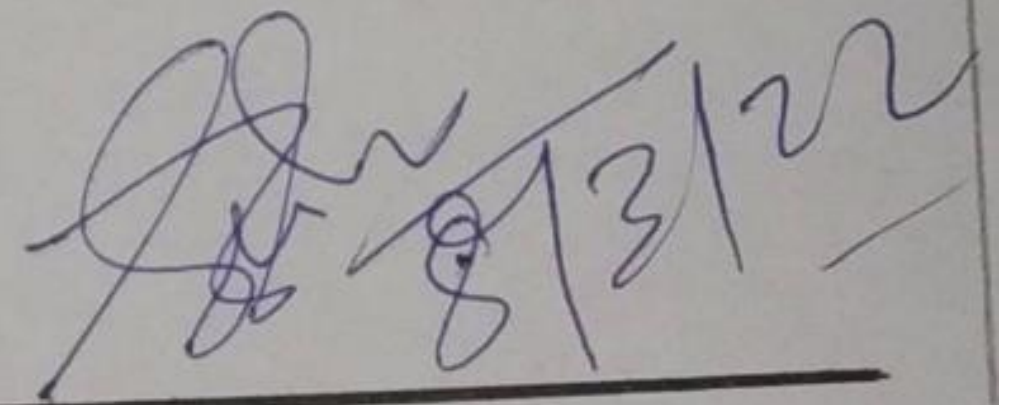
I would like to express my special thanks of gratitude to my teacher Maumita Pal, who gave me the golden opportunity to do this wonderful project of 'Environmental Studies' on "Water Pollution in Raniganj City", who also helped in completing my project. I came to know about so many new things, I am really thankful to them. Secondly, I would also like to thank my parents and friends, who helped me a lot in finalizing this project work within the limited time frame.

Shreya Sadhu

1st SEM

2021-22

Date :- 08.03.2022



Signature of the teacher