



# GOVERNMENT GENERAL DEGREE COLLEGE, TEHATTA

## Tehatta, Nadia, Pin-741160

### Report of Field Work on the River Jalangi (Iron and Arsenic Content)

#### **Introduction:**


River water pollution is a major concern all over the world. River water is the main source of fresh water but its uncontrolled pollution is resulting in scarcity of fresh water at an alarming rate. Heavy metals like arsenic and iron are one of major river pollutants. The addition of these heavy metals can occur both naturally as well as in man-made ways. The leaching of minerals from soil layers specifically increases the iron and arsenic contents in rivers. The state of West Bengal in India suffers from toxic levels of arsenic and iron in underground water. These underground water levels are maintained by the nearby rivers. So, it is important to analyze the iron and arsenic contents of rivers so that the people depending on these rivers could be made sufficiently aware of the risks and help them find alternative water resources. In this fieldwork, we made a case study on the River Jalangi- Iron and arsenic content.

#### **The geographic location of the river:**

Jalangi is a moribund river of 233 km in length in the Bhagirathi-Hooghly basin covering the districts of Nadia and Murshidabad in West Bengal. The Jalangi leaves the Ganges or Padma at the extreme north of the Nadia district at 24°05'26'' N and 88°41'53'' E and joins the river Bhagirathi at Swarupganj (23°24'42'' N and 88°22'50'' E), opposite Nabadwip, the birth-place of Sri Chaitanya. In our report, we have covered the river from the Tehatta Ghat to Chander Ghat which is in the close vicinity of our college, Government General Degree College, Tehatta, Nadia.

#### **Flora and fauna of the river:**



  
**Dr. Sibsankar Pal**  
Officer-in-charge  
Govt. Gen. Degree College, Tehatta  
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The Jalangi River has quite a rich biodiversity. According to the reports of Ray and Pal, more than thirty-five numbers of fish species are present in the river. These are rohu, catla, Nile tilapia, Indian tilapia, cheetal, peacock eel etc. Apart from huge diatoms present the river, Jalangi contains *Anabaena cylindrica*, *Anabaena azollae*, *Anabaenopsis sp.*, *Cladophora sp.*, *Spirogyra sp.*, *Ulothrix sp.*, *Stauroneis sp.*, *Nitzschia sp.*, *Nostoc sp.*, etc. These algae provide a huge amount of food and environment for growing a large number of species of fish present. Eelgrass (*Vallisneria sp.*) is available at Jalangi. Three species of dragonflies such as Scarlet Skimmer (male and female), Ditch Jewel and Long-legged Marsh Glider are found in the vicinity of Jalangi River. Two species of damselflies (Blue River damsel and Coromandel Marsh Dart) are also reportedly found.


### Role of the river in the lives of local people:

The river is the chief source of irrigation for the local farmers. The districts of Nadia and Murshidabad produce large amounts of jute, rice, wheat, and mustard seeds. Most farming lands lie along the banks of the river. The river is also used for decomposing the jute fibers. Villagers also use the river water to meet their daily essential activities like bathing and washing. The large varieties of fish act as a source of livelihood for a large number of fishermen.

### Level of iron and arsenic in the river water:

Description of sample and location	Water quality parameters	Observed value ( $\mu\text{g/L}$ )	Recommended value as per Indian standard ( $\mu\text{g/L}$ )
River water sample	Arsenic (As)	20	10
Location: Jalangi	Iron (Fe)	400	300



  
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যাদবপুর বিশ্ববিদ্যালয়  
কনকাতা-৭০০০৩২, ভারত



\*JADAVPUR UNIVERSITY  
KOLKATA-700 032, INDIA

SCHOOL OF ENVIRONMENTAL STUDIES

Ref. No. SOES/JU/WT/S214/May/2023

Date: 17<sup>th</sup> April, 2023

To  
Officer-in-Charge  
Government General Degree College, Tehatta  
Tehatta, Nadia-741160

Sub: Analysis report of your supplied water sample

Sir,

With reference to your letter dated 28<sup>th</sup> March, 2023 (Ref. No. Nil), please find herewith the analytical report of the water sample collected and supplied by your organization dated 28<sup>th</sup> April, 2023.

Description of sample & Location	Water quality parameters	Observed value	Recommended value as per Indian standard
River water sample	Arsenic (As)	20 µg/L	10 µg/L
Location: Jalangi	Iron (Fe)	400 µg/L	300 µg/L*

\* No health based guideline value for iron in drinking water proposed by WHO; however, the *taste* is usually unacceptable at concentration above 300 µg/L.

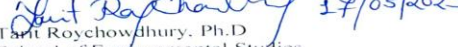
The guideline and recommended values of arsenic in drinking water proposed by different organizations are as follows:

Organization	Guideline value (µg/L)	Recommended value (µg/L)
World Health Organization (WHO)	10	-
United States Environmental Protection Agency (USEPA)	-	10
Indian Standard	-	10

From the estimated value, the supplied water sample is unsafe for drinking and cooking with respect to the recommended value of arsenic in drinking water.

**Warning:** In West Bengal, groundwater samples that had initially been safe with respect to arsenic ( $< 10 \mu\text{g/L}$ ) were found later to be contaminated with arsenic ( $> 10 \mu\text{g/L}$ ) within a span of 3-7 years and arsenic concentrations in many tube wells had been increased by as much as 5-20 folds (based on our research report). It is therefore suggested to analyze the water sample again after about a year. Surface water is very unusual to be contaminated with arsenic through geogenic activities (natural contamination); however, it can be contaminated through anthropogenic activities.

Sincerely yours,

  
Tarit Roychowdhury, Ph.D  
School of Environmental Studies  
Jadavpur University, Kolkata-700032  
Tel: 0091-8902034430 (M)  
Email: rctarit@yahoo.com; tarit.roychowdhury@jadavpuruniversity.in  
(Former JSPS and Eco-Frontier Fellow, Govt. of Japan)


\* Established on and from 24<sup>th</sup> December, 1955 vide Notification No.10986-Edu/IU-42/55 dated 6<sup>th</sup> December, 1955 under Jadavpur University Act, 1955 (West Bengal Act XXIII of 1955) followed by Jadavpur University Act, 1981 (West Bengal Act XXIV of 1981)

দূরভাষা: ৯১-৩৩-২৪২৪-৬২৪৭ (সেবাসরি)  
৯২-৩৩-২৪২৪-৬৬৬৬ (২৮৭৪, ২৪৪৩ প্রসারণ)  
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### **Threats caused by the presence of excess iron and arsenic in the river water:**

High iron in water can cause diabetes, hemochromatosis, stomach problems, and nausea in humans. It can also damage the liver, pancreas, and heart. Iron causes damage to buildings, pipes, utensils, and bathroom fittings causing a lot of economic loss. Arsenic on the other hand causes cancer of the skin, lungs, and bladder. The presence of these heavy metals also has resulted in reduced farming yield which leads to the application of more chemical fertilizers causing even further pollution.

### **Conclusion:**

The presence of iron and arsenic in amounts which is greater than the permissible limit is a serious issue. The residents need to be made aware of this fact so that they adopt means to remove the arsenic and iron from the water before using it whether for personal purposes or for farming purposes. Government can take the initiative to install iron removal plants in villages. Drinking water should be purified before supplying to households. Also, regular surveys need to be carried out to investigate the iron and arsenic levels in the river.



  
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Sample Photographs of the Field Work



  
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➤ Quotation written on the flex is “Save the Jalangi River”

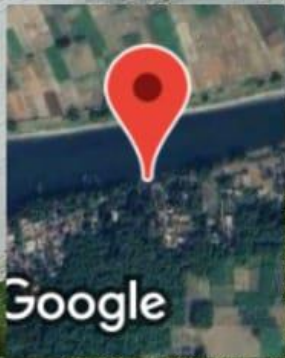
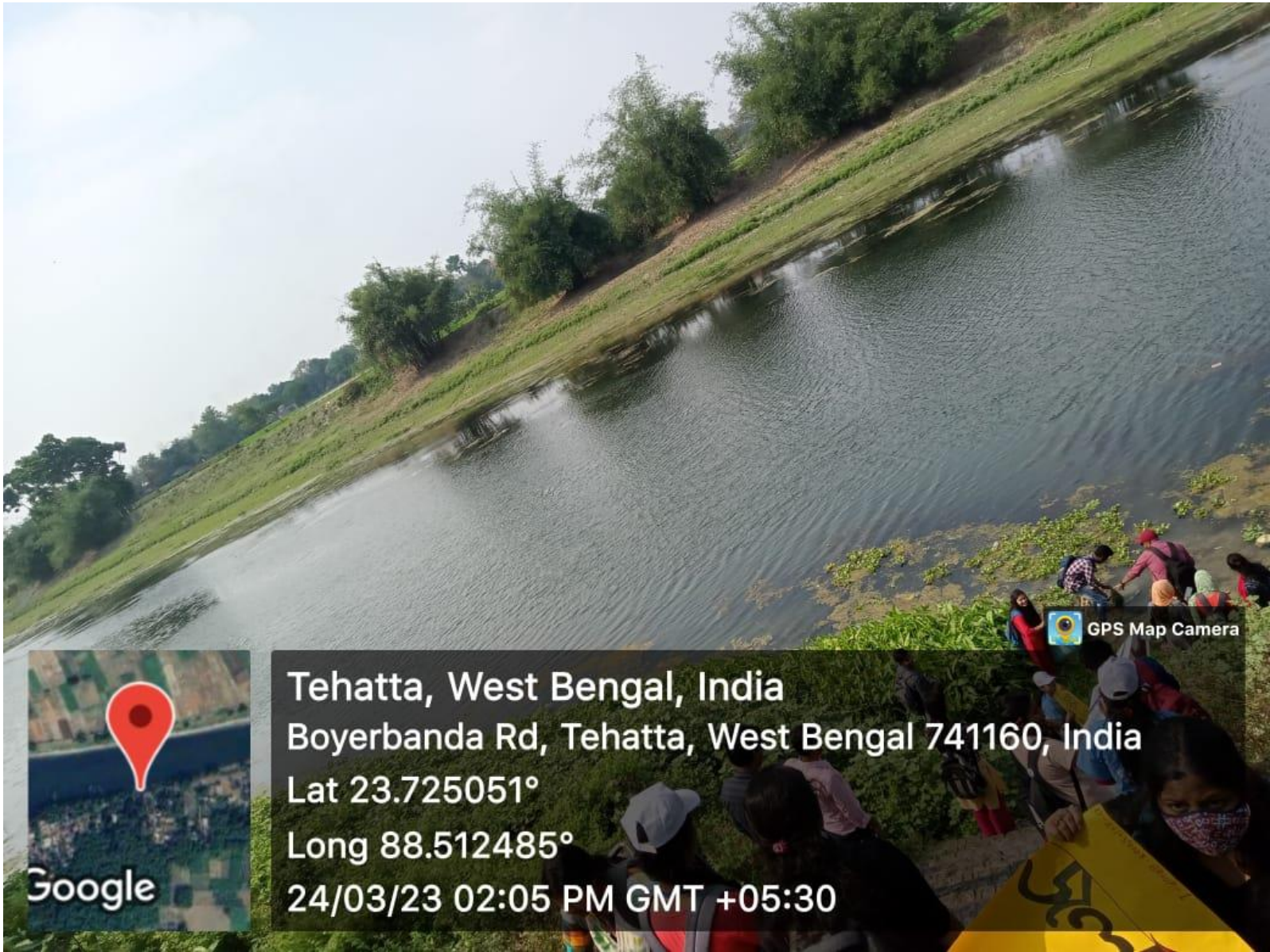


  
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Tehatta, West Bengal, India  
Boyerbanda Rd, Tehatta, West Bengal 741160, India  
Lat 23.725051°  
Long 88.512485°  
24/03/23 02:05 PM GMT +05:30



  
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- Quotation written on the flex is “Stop using Chemical Fertilizer”



  
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GPS Map Camera

Tehatta, West Bengal, India  
Boyerbanda Rd, Tehatta, West Bengal 741160, India  
Lat 23.72506°  
Long 88.512492°  
24/03/23 02:05 PM GMT +05:30

Google



  
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### Permission Letter from the Competent Authority for the Field Work

DMDE-1  
PI. See

To  
The Sub-divisional Officer,  
Tehatta, Nadia.

Date: 21/02/2023

**Sub:** Permission for carrying out a field work on the river Jalangi as a part of environmental studies.

Sir/Madam,

I would like to request you to grant permission to carry out a field work on the river Jalangi as a part of environmental studies during the period of 01/03/2023 to 30/06/2023.

Objective: To carry out a thorough survey on the pollution and cleanliness of river Jalangi.

Participants: Students and teachers of Government General Degree College, Tehatta.

Outcome: To make the students aware of their local environment and improve their environmental ethics.

I assure you that our teachers will properly guide the students to prevent any undesirable situation that is going to affect the locality. Hope for your kind cooperation in this regard.

Thanking You,  
Yours faithfully



Allowed for  
the area, from  
Chandernaghat to  
Tehatta Ghat.  
mes me 27/2/23.  
Sub-Divisional Officer, Tehatta  
Tehatta, Nadia

Government General Degree College, Tehatta  
Govt. Gen. Degree College, Tehatta  
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21/2/23  
Dr. Sibsankar Pal  
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