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# Pollution status of Gomti river at Lucknow - A case study

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**Abstract** : This Study was aimed to determine the current status of river Gomti along the Lucknow City. Physico- chemical charaecterstics, level of organic matter, various heavy metals and sewage pollution and their variation has been studied from up stream to down stream of Lucknow. The samples are taken up stream to down stream regions of the river. Water samples are subjected to analysis like D.O, B.O.D. and Total coliform, Studied concluded the larger number of drain & are responsible for pollution in river Gomti that enter directly into the river carrying untrated industrial and domestic waste.

**(Key words :** B.O.D., Dissolved oxygen, Total coliform)

## Introduction

The scientist and investigator are actively interested in study of water pollution problem in big rivers and urban regions of the country, ignoring the fact that small rivers like Gomati covers a significant area and make a huge contribution to the pollution level of Ganga at Lucknow. More ever, the local problems of health and hygiene, metal corrosion and aquatic hardness may be solved by studying the pollution to the localized site. Above fact stimulated the investigators to take up this project, with reference to water pollution and its removal.

Water is essential for our existence. Good and adequate water is essential for the comfortable and happy living. As per the Indian Standards (IS-1172), the requirement of water per person per day is 135 ltrs. (about 9 buckets) for hygienic living. Of this total, the quantum needed for cooking and drinking purposes is only about 10-15 ltrs.; a substantial portion (about 40-45 ltrs.) goes for flushing the water closets. The rest goes for bathing (30ltrs.) washing of clothes (15-20ltrs.), vessels (10-15 ltrs.), floors (5 ltrs.), etc. The portion needed for cooking and drinking at least has to be absolutely free from any pollution.

Varied beneficial uses of water require different levels of minimum purity. Water is suitable for certain designated use if it complies certain criteria. Classes A to E are defined by Central Pollution Control Board (CPCB) in 1991.

## Experimental

### Material and Method :

There are total 26 drains consist of 14 drains from up stream side and 12- drains from down – stream side.

Up stream sites :

1. Gaughat
2. NER Upstream
3. Kedar Nath
4. Sarkta
5. Rata
6. Klazirganj
7. Dalganj No - 1
8. Daliganj No- 2
9. Arts College
10. Ghasyari College
11. Hanuman Setu
12. Mohan Mekin

**Down Stream Sites :**

1. China Bazar
2. La- Place
3. Jopling Road
4. G.H. Canel
5. Jiamau
6. La- Martiniere
7. TGPS
8. Baba Ka purwa
9. Kukrail

**TABLE-1: Tolerance Limits For Inland Surface Water**

| Designated Best Uses | Class | Criteria |
|---|---|---|
| Drinking Water and Domestic supplies without treatment but with disinfection | A | pH6.5-8.5<br>DO>6mg/l;BOD<2mg/l<br>Total Coli.<50MPN/100ml |
| River bathing, swimming and water contact sports | B | pH6.5-8.5<br>DO> 5 gm/l ; BOD < 3mg/l<br>Total coli. < 500MPN/100ml |
| Source of raw water for municipal supplies consumed only after conventional water after treatment | C | pH 6.0 -9.0<br>DO> 4mg/l ; BOD < 3 mg/l<br>Total Coli.(5000 mPN/100ml |
| Propagation of wild life animal husbandry and fisheries | D | pH 6.5 – 8.5<br>DO> 4 mg/l<br>Free Ammmonia (asN) <1.2 mg/l |
| Agriculture, Industrial cooling, washing hydro-power generation and controlled waste-disposal | E | pH 6.0 -8.5<br>EC (at $25^0$C). < 2250μmhos/cm<br>SAR < 26 ; Boron < 2mg/l |

10. Kedar Nath
11. Nighatganj Drain
12. Rahimnagar Drain

**Conclusion**

Water quality of Gomti River is mainly affected by sewage/Domestic Wastes and industrial wastes disposal in to the river. Apart from Mohan Mekin there are many Chiken cloth colouring units disposing colour dyes etc. in to the river Gomti. The washing of cloths near Gomti river increases DETERGENTS wastes. Also due to Religion, that is Temple's flowers, Idol submersion during Durga Puja, Ganesh Puja etc Cattle's bathing are also polluting the river water. Use of Plastics and their disposal in the river is creating havoc.

**Recommendation**

The Solid and Liquid Wastes of the City should be disposed only after proper treatment. Ban of the use of Polythene bags. Responsibility should be fixed on factory owners who are disposing wastes without proper treatment Awareness Programme should be ititiated. Time to time cleaning of trunk Sewer line of the city is required. Also the students of school / Colleges should be taught and made aware of the water pollution.

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**Water Quality Data of Gomti River**

**(Jan 2017- June 2017)**

| | | Jan | Feb | March | April | May | June | July | August | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Average of up stream site | D.O (mg/l) | 9.60 | 8.30 | 5.80 | Nil | 5.3 | Nil | 3.8 | 4.70 | 4.80 | 7.60 | 9.34 | 9.10 |
| | BOD (mg/l) | 3.40 | 3.2 | 3.4 | Nil | 3.6 | Nil | 4.15 | 3.20 | 3.30 | 3.60 | 3.40 | 2.90 |
| | Total Coliform (MPN/100ml) | 3500 | 2700 | 4000 | Nil | 4600 | Nil | 2800 | 2800 | 2400 | 3900 | 2800 | 3500 |
| | Fecoil (MPN/100ml) | 1700 | 2200 | 2700 | Nil | 3300 | Nil | 1400 | 1700 | 1300 | 2600 | 1700 | 2800 |
| Average of (Low stream Site) | D.O | 1.40 | 1.40 | 1.20 | Nil | 2.7 | Nil | 3.2 | 1.80 | 1.50 | 1.86 | 2.14 | 1.30 |
| | BOD | 11.20 | 12.0 | 12.0 | Nil | 11.5 | Nil | 7.00 | 13.0 | 13.0 | 12.60 | 14.00 | 13.00 |
| | Total Coliform | 92000 | 170000 | 170000 | Nil | 140000 | Nil | 92000 | 130000 | 140000 | 11000 | 130000 | 92000 |
| | Fecoil | 35000 | 130000 | 130000 | Nil | 110000 | Nil | 54000 | 79000 | 110000 | 79000 | 79000 | 54000 |

(Source:- Gomti Pollution Control Board )

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