The present study is related to Sagar city where big industries are nonexistent but small scale industries like automobiles servicing workshops, garages, gold smith’s workshops, hospitals, denting-painting workshops are mushrooming in every nook and corner of the city which has a huge population of about 2.5 million people of every class.

About 3/4 part of the human population and animal’s depend on Lake Water. Drinking water sources like dug wells, tube wells and hand pumps are also situated around the Sagar Lake. All of the waste, soaps, detergents and all other effluents are drained into Lake daily for the last hundreds of years. The Lake has become receptacle of sewerage effluents and open toilets [1, 2, 3]. In the past three decades the increasing numbers of vehicles 4, 3 and 2 wheelers are also pouring their emissions in the atmosphere of Sagar city. As a result density of toxic gases, smoke and other pollutants are shadowing each house of the Sagar city [4, 5]. The pollutants are also affecting the Lake water and other drinking water resources [6].

This study reveals that the “Lakha Banzara” Lake water and other drinking water sources are under the attack of pollutants which are released from vehicles, garages, denting-painting workshops etc. [7]. These pollutants are increasing day by day.

All these released pollutants have a great ecological impact on inhabitants and on the quality of water of Sagar city. The present study embarks on investigating the physiochemical parameters like pH, EC, TSS, TDS, T.Al., T.H., CaH., MgH., DO, BOD, COD, F, Cl’, NO₃⁻, SO₄²⁻, PO₄³⁻, Na⁺, K⁺ by various sophisticated laboratory methods along with 6 heavy metals Pb, Cd, As, Se, Cr and Cu [8, 9, 10].
The blood samples of the people exposed to this environment like automobile garages, painting workshops etc. have been investigated. The study shows their polluted environment; unhygienic activities, dirty clothes, low safety precautions etc. and all these conditions increase high contamination of pollutants in living beings [11].

The results obtained by the analysis of the collected water, soil and blood serum using different experimental and instrumental methods shows that the people of Sagar city are under the threat of pollution because most of the pH of water samples from lake water was above 7 in summer and pre monsoon season which indicates that the water is alkaline it also shows high growth rate of algal population, which utilized CO₂ through photosynthetic activity [12, 13]. The pH values (7.0-8.5), EC (304μΩcm⁻¹), TSS, TDS are 270ppm, 372 ppm respectively T.AL (190ppm), TH (152ppm), F⁻ (0.72ppm), Cl⁻ (53ppm), NO₃⁻ (1.70ppm), SO₄²⁻ (38ppm), PO₄³⁻ (0.0ppm79) Na⁺(22.3ppm), K⁺(9.8ppm) during pre-monsoon due to concentration of alkaline substance [14, 15].

The DO (5.0ppm) is an important test to study the quality of water. The lower values could be attributed to addition of sewage and agricultural effluent containing oxidisable organic matter and consequently the biodegradation and decay of vegetation at higher temperatures. BOD and COD of Lake water were also increased in summer 6.5ppm and 42ppm respectively due to high concentration of organic waste. [16, 17]

The high concentration of Pb and Cd in Lake is 2.6ppm and 0.055ppm respectively, indicates that the sewage and domestic waste, garages waste were directly and indirectly have been mixed thoroughly in natural water [18, 19].

The concentrations of As (0.052ppm), Cr (0.037ppm), Se(0.019ppm) and Cu(0.69ppm) are also indicative of the pollution in water. The concentration of Cu
was due to the discharge of Gold Smith's Workshop and Electroplating Units effluent. The increase in ground water depth resulted in high As and F levels [20, 21, 22].

The results of this study indicate that the quality of Lake Water is very bad not only for human being but its condition is not suitable for animals and aquatic flora and fauna [23, 24, 25]. During the course of present study the hand pumps, dug wells near the Lake were also sampled, the data shows that these drinking water sources are also badly affected with pollutants [26, 27]. The results of Pb concentration were not found to be higher than prescribed permissible limits in the hand pumps near Duffrin hospital (0.049 ppm), Chakraghat (0.051 ppm), Bus stand (0.050 ppm).

The results calculated from the data obtained from Bhagwanganj where there are maximum numbers of garages, denting- painting workshops, battery workshops are operating the values were quite high than the prescribed limits. The hand pumps dug wells have almost all drinking water quality parameters higher than the permissible limits like DO 5.8 ppm, BOD 14 ppm, COD 74 ppm and Pb 0.56 ppm, Cd 0.31 ppm, As 0.033 ppm, Se 0.033 ppm, Cr 0.019 ppm and Cu 0.43 ppm shows that they are getting heaving contaminated by above mentioned pollutants [28].

The survey shows that the people living around the Sagar City Lake are suffering from chronic water borne diseases [29]. The concentration of Pb (0.09 ppm) and Cd (0.09 ppm) in human blood by their blood serum analysis proved that the diseases like kidney disorder, breathing problem, memory problem, skin disease, gastro-enteritis, dysentery etc. due to higher exposure of pollutants and poor hygienic habits in persons who are living or working in and around such environment [30].
The soil samples are also shows that the soil is a source of contamination of water due to excessive (Pb 0.43ppm and Cd 0.63ppm) contents. The concentration of heavy metals in blood and the case study showed that public health is at an alarming stage. This is the alarm for the people of Sagar city for a cleaner and greener approach to avoid pollutants which may cause severe health problems [31].

All parameters indicate poor quality of water for drinking as well as agricultural purpose hence proper care must be taken to avoid further contamination of ground water and its quality be monitored periodically by city administration as well as by NGO’s [32].

Every where in our surrounding the living being are under the attack of the pollutants, which are slowly damaging the living system either in the form of the diseases or many other aspects [33, 34]. It should be a matter of further investigation, so that at least the environment around living being becomes safe [35, 36].

Though in country like India there are lots of hospitals and health centers are being established after independence and still many of them are under plan. Finally the outcome of this work reveals that "Prevention is better than the cure" is a perfect phrase.

So if we prevent our environment form pollutants we may be able to contribute something for the development of our country and future generations. Our approach should be for a cleaner and greener city scopes.

“Water, water everywhere, not a drop to drink”
(The Rime of the Ancient Mariner)
Significance and Conclusion

References


