EFFECT OF INDUSTRIALISATION ON WATER AROUND AMBARNATH AREA.

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UNIVERSIDAD DE GUANAJUATO — GTO Grandeza de México — CONAGUA Comisión Nacional del Agua — ILEC — SUSTAINABLE DEVELOPMENT GOALS

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WLC18--0157

Introduction

Ambarnath area is one of the fast-growing townships in Thane District of Maharashtra. Rapid industrialization has taken place in this town, since last 2-3 decades. With industrialization urbanization has also increased. Along with it, population of this town too has increased, which further led to growth of residential as well as slum area around industrial zone. With the growing population and industrialization; domestic solid waste, sewage from residential areas and effluent from industrial area also increased. Around industrial area many slum areas settled within the last few decades. These slum areas are having lack of sanitation facilities, inadequate solid waste management facilities, and poor drainage system problems. Such problems may cause contamination of surrounding area. Therefore, an attempt has been made to find out the groundwater quality around Ambarnath industrial zone to check the effect of industrialization and urbanization on surrounding area.

It is important to analyze the ground water to provide the baseline data for future study. Such data is very useful for the local people to avoid further problems related to their health and environment. By doing survey in various areas, sampling stations were selected. Manmade activities and environmental conditions around these areas were also taken into consideration, then 06 representative stations from the Ambarnath area were selected and analyzed for physicochemical - parameter.

Methodology

06 sampling sites were selected for study purpose from Ambarnath area & analysed for physico-chemical parameter for 1 year.

A detail study was carried out during January 2013 to January 2014.Water samples were collected from 06 stations in the first week of every month, consecutively for 1 year. The samples were analyzed for the various physico-chemical parameters. Obtained results were compared with the WHO and BIS standards. Seasonal variation shown in tabular form. The collected samples were analyzed in laboratory for different physical and chemical parameters as per the standard methods of American Public Health Association (APHA), 1985 and the methods given by Trivedi and Goel, 1986.

Results

During the study period, it was found that the temperature of groundwater was higher in summer and lesser during winter season. During the entire study period maximum Electrical Conductivity was found at Station No. S3 i.e., at Bhimnagar Area Open Well (797.3 µS/cm) in the winter season of 2013. It was observed that the Turbidity of the groundwater sample increases during monsoon compared to summer and winter season.

In the study area, concentration of Dissolved Solids was found more in monsoon season. Site-wise variations were found more for TDS compared to seasonal variation. TDS was also found more in case of Open well, compared to Bore well. TDS value was found more in case of Open well. This may be due to an effect of sewage or drainage line, which affects the nearby aquifer.

lowest pH was found at Station No. 1, Kansai Gaon Open Well (6.98) during summer season of the year 2013. Kansai Hand Pump showed highest pH during summer season. The possible reason behind this may be, due to disposal of solid waste near to hand pump area, which may leads to seepage in nearby hand pump area, which may cause the increase in pH value of hand pump area water. All groundwater samples were found between the acceptable limit of BIS and WHO i.e. 6.5 to 8.5 for pH.Total Alkalinity in study area varied from 167 mg/l (S2) to 233 mg/l (S1) in summer, from 154.5 mg/l (S2) to 207 mg/l (S1) for the year 2013-2014.

Conclusions

No specific Spatial and temporal variation pattern had been found for temperature parameter.

All groundwater samples were found within the permissible limits of BIS for Total Dissolved Solids, Alkalinity.

TDS were found more in case of open well, compared to bore well. Site wise variations were found more in case of TDS compared to seasonal variation. E.C. and TDS were found highly correlated with each other and Correlation Coefficient matrix also supports this interpretation. It was observed that open well water shows more turbidity compared to bore well water for all season, and they were always found beyond the permissible limit given by BIS and WHO. All open well samples indicate water pollution problem. It was found that open wells are extremely polluted by sewage water and up to certain extent they are also polluted by industrial effluent seepage.

Acknowledgments

Thanks to WLC for giving this opportunity to write research
paper. Thanks to all members who cooperated during my research work.

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