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# Estimation of Iron Lead Contamination in Groundwater in Manendragarh

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**Abstract— Iron impurity in groundwater is one of the probable drinking water-related hitches that can pose adverse well-being effects on humans. The main goalmouth of this study was to determine the amount of iron content in groundwater and zones with iron-contaminated in Manendragarh. The best suited period in post-monsoon season in minimum variation on ground waters to lead concentration. The best suited season in pre-monsoon seasons with minimum variation on ground water iron.**

**Keywords— Groundwater, Drinking water, Heavy metals, coal mines.**

## I. INTRODUCTION

Water is an abnormally good solvent for a large diversity of ingredients and is a vital component of all viruses, being necessary for most biotic processes. Different most substances water is less impenetrable as ice than in liquid form thus ice floats on liquid water. Water is defined as a vital nutrient because it is essential in amounts that exceed the bodys capability to produce it. All biochemical reactions occur in water. It fills the places in and between cells and helps form structures of large molecules such as protein and glycogen.

Today, with imperfect water resources, less than one percent of accessible water means are suitable for human ingesting. Therefore, it is crucial to protect water funds with proper supervision. Groundwater maintenance, especially in arid and semi-arid areas, has particular commercial importance. The rapid growth of populace and growth over the past decades had a major impact on groundwater quality due to overutilization and increased agronomic demand, internal and industrial water supply. Extreme use of groundwater as a result of population growth has led to a reduction in these valuable funds.

Water quality is resolute by the physical and chemical limnology of a tank and includes all physical, chemical and organic issues of water that affect the valuable use of the water. Rivers usually subjected to urban and industrial wastewater and runoff from agronomic land, the former organizes the constant polluting source whereas the latter is a seasonal phenomenon. Significant physical and chemical parameters manipulating the aquatic environment are temperature, Total suspended solid, dissolved oxygen, Oxidation reduction potential, pH, total alkalinity and acidity and heavy metal contaminants (Rajaganapathy, 2015).

## II. MATERIAL AND METHOD

The quality of water can be defined by its physical, chemical appearances. Following material and technique were used for the study perseverance:-

Selection of Specimen Locations ground Water samples of Manendragarh its surrounding coal field area were collected from 15 sampling location. The sampling was done amongst 8.30 to 11.00 AM for the period of pre monsoon, post monsoon, winter and summer seasons for years, 2016.

The list of different specimen station of ground water are shown in the table -1. The used approaches of estimation of Heavy metals by Atomic absorption spectrophotometer.

**Table .1: List of sampling station of ground water of handpump**

Sampling location code	Sampling Station of Ground water of Handpump (GW- Groundwater)
GW1	Away from Manendragarh,12 km Ramnagar colliery area
GW2	Away from Manendragarh,15 km Anuppur road NH-43
GW3	Manendragarh Ahmad colony hasiya pump
GW4	Away from Manendragarh, 13.5 km Dola Gram part-2 colliery area
GW5	Manendragarh Loko Colony
GW6	Away from Manendragarh,16 km C-Sector colliery area
GW7	Away from Manendragarh, 16 km. NH-43 new dola near village
GW8	Away from Manendragarh, 4.50 km. Jhagrakhand colery near central school
GW9	Away from Manendragarh, 12 km. Newdola gram colliery area part- 1
GW10	Colery area Ledri Nagar Panchayat near G.M. office
GW11	Away from Manendragarh, 9 km. Ramnagar colliery bypass area
GW12	Away from Manendragarh, 3 km Jhagrakhand colliery near railway track
GW13	Manendragarh, Mauhaarpara area
GW14	In front of vetnary hospital Manendragarh.
GW15	Near hasdeo hotel Manendragarh.

### III. RESULTS AND DISCUSSION

Major source of Lead contamination is the combustion of fossil fuel drinking to water it occurs primarily due to corrosion of Lead pipe and solders especially in areas of soft water. Since dissolution of Lead requires an extended contact time, Lead is most likely to be existing on tap aquatic after being in the service connection piping and plumbing overnight. (CPCB, Bhopal).

Extreme concentration may promote microbial events in pipe and service mains, producing obnoxious odors and red- red disease in water. In groundwater generally occurs to two oxidation states, ferrous and ferric. Generally high concentration of iron causes bitter and astringent taste to water. (CPCB, Bhopal).

The result showed in Fig.1, the lead distribution all the season data was positive deviation from middle (*skewed left* also known as *negatively skewed*). From the box plot graph we can also see that the moderate are nearer to the first quartile than the third quartile. It was inferred that concentration of Lead data of all the season closes first quartile.

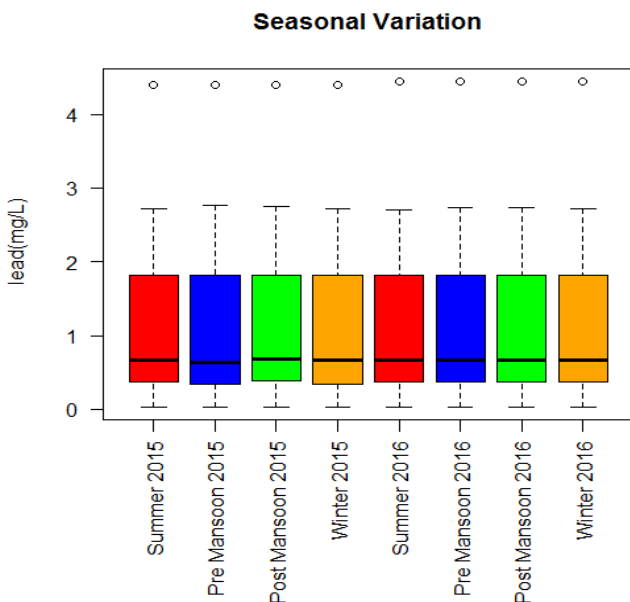


Fig- 1 .Seasonal variation of Lead mg/L

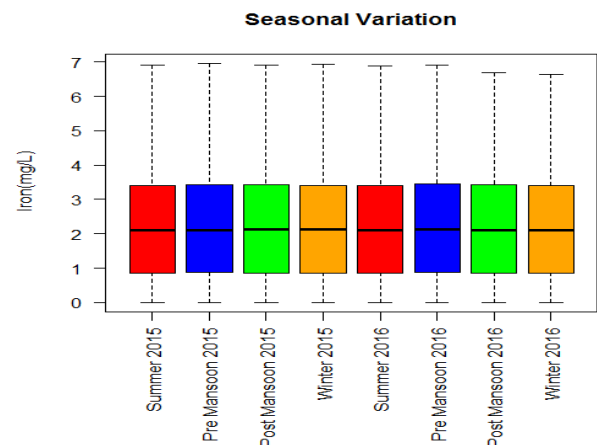


Fig-2 .Seasonal variation of iron mg/L

The result showed in Fig.2, the Iron distribution all season data was positive deviation from middle (*skewed left* also known as *negatively skewed*). From the box plot graph we can also see that the moderate are nearer to the first quartile than the third quartile. It was inferred that concentration of Iron data of all the season closes first quartile.



#### IV. CONCLUSION

The maximum variation lead of ground water obtained pre-monsoon season. Hence, it is inferred that out of four seasons the best suited period in post-monsoon season in minimum variation on ground waters to lead concentration

This results supported by (Shaheen et al. 2012) the choosiness arrangement of deliberate metals zeolite can be assumed as Lead > Copper > zinc > Cadmium > Nickel About 57, 47, 78, 22 and 29 % from the total absorbed Cadmium, Copper, Nickel, Lead and zinc recovered by DTPA indicating that liability of the adsorbed Ni was higher than, Cd, Cu, Zn, and Lead respectively.

The maximum variation of iron in ground water obtained summer season. Hence, it is inferred that out of four seasons the best suited season in pre-monsoon seasons with minimum variation on ground water iron. These results supported (Riza and Singh, 2010). The Fe concentration was found 64.6 and 95.0 µg/L in summer and winter season respectively. (Edo et al. 2014) Heavy metals, oil content other physicochemical parameters were also determined. The levels of BOD, total coliform counts, PO<sub>4</sub><sup>2-</sup>, TSS, Cu, Fe, Cr and Ni exceeded.

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