



# Chemical Quality of Groundwater of Armori Town Gadchiroli District Maharashtra

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## **Abstract:**

Present study deal with impact of urbanization, increased human population and improper planing of sewage waste on underground water and surface water in armori town district gadchirolimaharashtra. Water is important source for the survival of life on the earth. Contamination of such water is responsible for health hazards, therefore it is necessary to investigate ground water quality and to study physico- chemical parameter of groundwater of armori town whether it is suitable for drinking purpose of the town people or domestic purpose in the area. A systematic study of water quality from different location was conducted during January 2014 to Dec 2014. 23 dugwell sample and 19 borewell water samples were selected for sampling. Analytical result revealed that each parameter shows variation from place to place in kalagota there is less percentage of calcium in the area as compared to shaktinagarandLaxmivasahat, other wise nature of water is soft.

## **Introduction :-**

Groundwater is major source of freshwater for human consumption. Ground water contains high degree of minerals which depends upon the quality of soil and rocks. Groundwater quality is varied due to ecological factors, groundwater level, industrilization and agriculture activity. In the developing countries like India, release of industrial and domestic waste to the water bodies without treatment is one of the major reason of water pollution. The industrial and domestic waste not only affect the water bodies of the area but also exert an impact on physico - chemistry of groundwater.

Recently warhateetal studied water quality status of borewell in wani using water quality index (Wqi) and evaluate quality of given water bodies. Wankhede RR and Bhadange S.G. studied correlation of physico-chemical characteristic of water from borewell of digrastahsil area, maharashtra. Abdul Hameedetal studied application of water quality index for assessment of dokan lake Ecosystem kurdistan region Iraq. Reza R. studied physico - chemical analysis of water and give systematic approach to study water analysis in detail.

## **Material and Methods:**

Groundwater sample were collected in polythene bottle of 1 litre capacity from different location of Armori town covering all the area. The samples were collected from borewell as well as dugwell by applying standard method of collection of water sample. Parameter like temperature, TDS,  $\text{pH}$  were analysed immediately after sampling at the field and parameters like total hardness, nitrite, chlorine, alkalinity, nitrate, calcium andmagnesium were analysed in the laboratory. All the chemicals used were AR grade. The standard method of American Public health association (APHA) (1998) and waste water analysis by NEERI (1998) were use for the analysis of sample.





## Result and Discussion :-

Calcium has vital role in various physiological activity. In present study calcium concentration varies from 05 ppm to 495 ppm. Three samples (D<sub>1</sub>, D<sub>5</sub>, D<sub>6</sub>) has low value of calcium from desirable limit of BIS (10500) standard specification in laxmivasahat area while in kalagota area four samples are below desirable limit of standard specification (D<sub>1</sub>, D<sub>2</sub>, D<sub>3</sub> D<sub>4</sub>) but in case of shaktinagar area all the samples are above desirable limit of 75 ppm. (109 to 212 ppm). In case of borewell sample, 32% samples are below desireable limit of BIS specification while all other samples are above limit of BIS 10500.

Magnesium concentration varies from 15 ppm to 351 ppm. Only two samples (D<sub>3</sub>, D<sub>4</sub>) are below desirable limit of standard specification in laxmivasahat while all other samples are above maximum permissible limit. In shaktinagar area three sample namely (D<sub>8</sub>, D<sub>9</sub>, D<sub>10</sub>) magnesium concentration is very high as compared to BIS 10500 because magnesium create laxative problem while all other sample are within the range of maximum permissible limit. In Kalagota area no one dugwell sample is suitable for drinking purpose.

In laxmivasahat all the borwell sample are within the range of limit except B<sub>1</sub>(315 ppm). In shaktinagar all the borwell samples are above maximum permissible limit except (B<sub>3</sub>) while in case of Kalagota area 42% sample are within permissible and rest are above the limit of standard spesification (58%).

Hardness in laxmivasahat are within the range except D<sub>2</sub>and D<sub>3</sub> while in shaktinagar 30% samples are above desirable limit and rest are within the range. In Kalagota all the dugwell samples are within the range of BIS (10500) standard specification with respect to hardness.

In case of borewell sample hardness of laxmivasahat all the sample are within range of desirable limit except B<sub>1</sub> (405 ppm). In shaktinagar all the sample are abovedesirable limit except B<sub>3</sub> (238 ppm) but in kalagota area all the sample are within the range desirable limit except B<sub>6</sub> (320 ppm).

Alkalinity of dw sample varies from 50 ppm to 780 ppm. All the samples in laxmivasahat are alkaline in nature except D<sub>2</sub> (50 ppm). In shaktinagar 50 % dugwell sample are within desirable limit and 50% above the limit while in case of kalagota all the sample are highly alkaline in nature (380 to 580 ppm).

Alkalinity of all the borewell sample in laxmivasahat are within desireble limitexcept B<sub>5</sub> (350 ppm). In shaktinagar area all the borewell samples are above desireble limit (300 to 840 ppm). In kalagota area all the samples are highly alkaline in nature (380 to 640 ppm).

TDS is the major indication of soluble salt in given water bodies. In laxmivashat 50 % dugwell sample are within desirable limit while 50% are above limit of BIS (10500)standard specification. In shaktinagar all the dugwell samples





are within the desirable limit of standard specification while in kalagota all the samples are safe with respect to T.D.S. (89 to 337 ppm).

TDS of borewell sample in laxmivasahat, 40% sample are safe with respect to TDS and rest are above the limit while in shaktinagar area all the sample are within desirable limit of standard specification (BIS - 10500). In kalagota all the borewell sample are safe with respect to TDS ( 154 to 280 ppm).

All the dugwell as well as borewell samples are safe with respect to nitrate and nitrite there is negligible concentration of chlorine in all the samples.  $p^H$  of the all the samples are within range of standard specification.

### **Conclusion :-**

Chemical analysis of groundwater reveals that kalagota area is more affected than the rest area of armor town. There is need of alternating source of drinking water for the people of the area.

In case of water quality deterioration it may be geogenic. In the present work calcium deficiency is observed in kalagota and laxmivasahat area which favours more alkaline nature of water and lack of chlorine concentration.

All other parameter except calcium and magnesium are within the range of BIS - 10500 it clearly indicate that water should be properly treated before supplying to public water supply.

### **References:-**

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