



## Assessment of Quality of Ground And Surface Water At Selected Locations In The Surroundings of The Proposed BARC Complex Around Visakhapatnam

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Accepted on 10<sup>th</sup> February 2015

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### ABSTRACT

*The Department of Atomic Energy, DAE is expanding its nuclear research programme at various places throughout India. To understand the impact of the forth coming Bhabha Atomic Research Centre (BARC) activities of Department of Atomic Energy on the surrounding environment in future, a baseline quality of different matrices in the existing conditions including ground and surface water is essential. A study was taken up to assess the quality of ground and surface water and the results are presented and discussed in this paper. The surroundings of BARC complex were divided into three different zones. A total of 19 samples from ground and surface water sources were collected and all the samples were analyzed for different physicochemical parameters and trace metals. All the samples were collected once in every four months, covering all the seasons, rainy, winter and summer in a year. B, Al, V, Cr, Mn, Fe, Ni, Co, Cu, Zn, As, Sr, Mo, Ag, Cd, Se, Ba and Pb were analyzed using inductively coupled plasma-mass spectroscopy, (ICP-MS). It can be seen from the results of the groundwater samples, the salt content is high in terms of chloride, sulphate, total dissolved salts, calcium and magnesium and exceeded the desirable limits but **are within the permissible limits as per BIS**. The high alkalinity values are recorded in few samples and exceeded the desirable limit of BIS. The results showed the following trend among the ground and surface in the seasons, summer > winter > rainy for most of the parameters. The trace metals for which standards are prescribed are within the desirable limits in ground and surface water samples. The metals Zn, Sr and B were found to high than other metals in groundwater samples.*

**Keywords:** Baseline quality, groundwater, physicochemical, metals.

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