



## Spectrophotometer-Based Analysis of Hexavalent Chromium in Various Water Bodies of Hyderabad City Reveals Large Anthropogenic Input

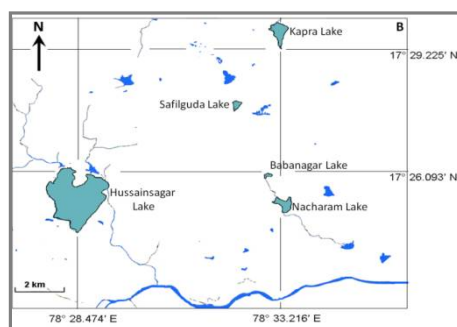
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### ABSTRACT

In India the awareness about the environmental pollution and its adverse effect is extremely low. The public, in general, do not bother and allow indiscriminate anthropogenic dumping of heavy metal and other wastes. However, long-term human exposure to toxic heavy elements through various pathways leads to severe health hazard. It is widely known by the researchers that the toxic form of chromium, the hexavalent chromium, is extremely hazardous. However, its concentration in surface and groundwater bodies has not been estimated in most of the cases. Such a situation is valid for the Indian cities also. Therefore, here we report spectrophotometer-based estimation of hexavalent chromium ( $57\text{--}268\ \mu\text{gL}^{-1}$ ) concentrations in different water bodies collected from various locations of Hyderabad city that include lakes and groundwater samples in their vicinity. Comparison of our data with the permissible safe limit for Cr(VI) in drinking water, set by the Italian authorities reveal that the studied water bodies and aquifers are contaminated to variable degrees and pose serious threat to the ecosystem. In view of low geochemical baseline value for chromium, the origin of hexavalent chromium contamination is inferred to be anthropogenic. Several medium and small scale industries in and around our study area appear to be responsible for hexavalent chromium contamination. An integration of toxic Cr(VI) data presented in this study together with health data indicates that there exists an impending health hazard, if proper mitigation measures are not taken up immediately. Some mitigation measures are therefore recommended.

### Graphical Abstract



Existing water bodies in specified portion of Hyderabad city.

**Keywords:** Lakes, Groundwater, Hexavalent chromium, Mitigation.