

## Comparative Study of Water Quality Parameters in the Proximity of Various Landfills Sites in India

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**Abstract :** The rapid urbanization in the developing countries is generating an enormous amount of waste leading to the creation of unregulated landfill sites at various places at its disposal. The liquid waste, known as leachate, produced from these landfills sites is severely affecting the surrounding water quality. The water quality in the proximity areas of the landfill is found affected by various physico-chemical parameters of leachate such as pH, alkalinity, total hardness, conductivity, chloride, total dissolved solids (TDS), total suspended solids (TSS), sulphate, nitrate, phosphate, fluoride, sodium and potassium, biological parameters such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), Faecal coliform, and heavy metals such as cadmium (Cd), lead (Pb), iron (Fe), mercury (Hg), arsenic (As), cobalt (Co), manganese (Mn), zinc (Zn), copper (Cu), chromium (Cr), nickel (Ni). However, all these parameters are distributive in leachate that produced according to the nature of waste being dumped at various landfill sites, therefore, it becomes very difficult to predict the main responsible parameter of leachate for water quality contamination. The present study is endeavour the comparative analysis of the physical, chemical and biological parameters of various landfills in India viz. Okhla landfill, Ghazipur landfill, Bhalswa landfill in NCR Delhi, Deonar landfill in Mumbai, Dhapa landfill in Kolkata and Kodungayaiyur landfill, Perungudi landfill in Chennai. The statistical analysis of the parameters was carried out using the Statistical Packages for the Social Sciences (SPSS) and LandSim 2.5 model to simulate the long term effect of various parameters on different time scale. Further, the uncertainties characterization of various input parameters has also been analysed using fuzzy alpha cut (FAC) technique to check the sensitivity of various water quality parameters at the proximity of numerous landfill sites. Finally, the study would help to suggest the best method for the prevention of pollution migration from the landfill sites on priority basis.

**Keywords :** landfill leachate, water quality, LandSim, fuzzy alpha cut

**Conference Title :** WLT 2018 : International Conference on Wastewater and Leachate Treatment

**Conference Location :** Sydney, Australia

**Conference Dates :** December 03-04, 2018