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# Water purification by using Adsorbents: A Review

By

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## Abstract

There are number of water purification techniques but the adsorption is one of the most simplest, effective and economical method for wastewater purification. In this article a large number of solid adsorbents such as Natural adsorbents, Agricultural Wastes, Industrial wastes, Biomass, Nano adsorbents : Carbon based nanomaterials, Nobel metal based nanomaterials, Metal oxide based nanomaterials, Spinel ferrite based nanomaterials, Nanocomposites, Dendritic polymers; Geopolymer cement have been discussed for the removal of different pollutants from waste water. Removal of Fluoride, Phosphate, Nitrate and Radionuclides from wastewater has also been reviwed in this article. Adsorption isotherm models, kinetic models, thermodynamic parameters and adsorption mechanism have also been discussed. The present article lists different type of adsorbents and reviews state-of-the-art of the removal of different pollutants from water. The efforts have been made to discuss the sources of contamination and toxicities of pollutants. Adsorption mechanisms responsible for pollutants removal by different adsorbents have been reviewed. Attempts have also been made to point out the advantages and drawbacks of adsorbents and the future research needs in the area of water purification by adsorbents.

**Keywords:** Adsorbents; Metal ions; Dyes; Phosphates; Nitrates; Fluorides; Nanomaterials

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