Accepted Manuscript

Water purification by using Adsorbents: A Review

N.B. Singh, Garima Nagpal, Sonal Agrawal, Rachna

PII: S2352-1864(17)30266-3
DOI: https://doi.org/10.1016/j.eti.2018.05.006
Reference: ETI 238

To appear in: *Environmental Technology & Innovation*

Received date : 10 August 2017
Revised date : 30 April 2018
Accepted date : 25 May 2018

Please cite this article as: Singh N.B., Nagpal G., Agrawal S., Agrawal Rachna, Water purification by using Adsorbents: A Review. *Environmental Technology & Innovation* (2018), https://doi.org/10.1016/j.eti.2018.05.006

Water purification by using Adsorbents: A Review

By

N.B.Singh[1*], Garima Nagpal[2], Sonal Agrawal[1] and Rachna[1]
[1]Research and Technology Development Centre, Sharda University, Greater Noida, India
[2]Department of Applied Science, SRM University, Modi Nagar, India

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, Dendritric 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

***Corresponding author:** Prof. N.B.Singh; Email: nbsingh43@gmail.com