عنوان مقاله:

Application of Nanomaterials as adsorbent for aqueous environments pollutions abatement :A Review

محل انتشار:

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نویسندگان:

Mahdi Hadi - *Department of Environmental health Engineering , School of Public Health, Hmadan*

Mahamad reza samarghandi

mansor zarabi

Hamid reza Ghaffari

خلاصه مقاله:

In recent years, drinking water regulations have continued to lower the maximum contaminant level (MCL) for pollutants. For instance, in 2002, the World Health Organization (WHO) decided to reduce the arsenic standard for drinking water from 50Lg/µ to 10Lg/µ. The stiffening of regulations generates strong demands to improve methods for removing pollutants from the water and controlling water-treatment residuals[1]. Clean water (i.e., water that is free of toxic chemicals and pathogens) is essential to human health. The world is facing formidable challenges in meeting rising demands of clean water as the available supplies of freshwater are decreasing due to (i) extended droughts, (ii) population growth, (iii) more stringent health based regulations, and (iv) competing demands from a variety of users. Today a number of techniques are used for treatment of water i.e. chemical and physical agent such as chlorine and it’s derivatives, Ultraviolet light , Boiling, Low frequency ultrasonic irradiation, Distillation, Reverse Osmosis, Water sediment filters (fiber and ceramic) Activated carbon, Solid block, Pitcher and faucet-mount filters, Bottled water, Ion exchange water Softener, Ozonisation, Activated alumina 'Altered' Water. Halogens such as chlorine (Cl) and bromine (Br) are well known and widely used as antibacterial agents, but the direct use of halogens as bactericides has many problems because of their high toxicity and vapor pressure in pure form [2]. Magnetically Assisted Chemical Separation (MACS) process is a useful decontamination technique widely used for water and liquid waste treatment involving superparamagnetic particles (iron oxide microspheres of 0.1 to 25mµ of diameter). With MACS, no residuals are produced and the microparticles can be reused. However, even if micron-sized adsorbents have an internal porosity that increases their specific surface area (SSA), the diffusion limitation within the particles leads to a decrease in adsorption efficiency. An efficient system to remove containments from solution would consist of particles with large surface area, small diffusion resistance, superparamagnetic properties, and high reactivity and affinity for adsorbates. Research has shown that nanoparticles represent a new generation of environmental remediation technologies that could provide cost-effective solutions to some of the most challenging environmental cleanup problems: pollution monitoring, groundwater, and soil remediation. The use of magnetic nanoparticles is also ... becoming promising for the adsorption of polluted ions during water an

کلمات کلیدی:

adsorption , nanotubes , nanoparticles, environmental pollutions