Emerging nanotechnology-based methods for water purification: a review

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ABSTRACT

Nanotechnology has a wide range of applications. This makes it a very important technology of the future. Its application in water and wastewater purification is of great interest not only in developing countries but also in the developed countries. The application of nanometals (silver and gold) and nanomembranes can help in developing of water treatment technologies which can be used for solving water-related problems such as waterborne pathogens, biofouling, removal of toxic metals (lead, arsenic, and chromium), etc. Moreover, nanotechnology can also be used to increase the efficiency of water filters. In this paper, we review the emerging nanotechnology-based methods for water purification, the potential applications of nanotechnology in the form of nanosensors, nanomembranes, nanometallic particles, and photocatalysis for water purification, nanosensors for detection of contaminants in water, novel magnetic nanoparticles for water desalination, and finally we present the possible risks associated with the use of this technology.

Keywords: Water purification; Nanotechnology; Conventional methods; Nanoparticles; Nanomembranes; Nanosensors; Nanofiltration

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