عنوان مقاله:

A review of the application of nanotechnology on the removal of antibiotic-resistant bacteria and antibiotic resistance genes from discharged municipal effluents and conservation of water resources

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خلاصه مقاله:

With the advancement of science and technology, the use of interdisciplinary science in solving the challenges in the field of water and wastewater treatment is considered as an evolution of technology. In recent years, nanotechnology has made significant progress in all areas of industry and biomedicine, and this is due to the unique features of this technology. By entering the nano range and reducing the size of materials, we see new physical and chemical properties of nanomaterials. Nanotechnology introduces and presents a complete understanding of important and influential properties at the atomic and molecular scale. The role of nanotechnology in water and wastewater treatment and the use of new properties of nanomaterials leads to the elimination and destruction of antibiotic-resistant bacteria and antibiotic resistance genes in municipal wastewater. Nanotechnology is used in various forms of nanosensors, nanophotocatalysts and nanomaterials identify, remove and destroy these pollutants in water and wastewater. The non-toxicity, biocompatibility and good chemical stability of some nanomaterials have attracted the attention of many researchers in this field. In this paper, the production and emergence of antibiotic-resistant bacteria and antibiotic resistance genes in municipal wastewater are introduced and the role of nanotechnology as a factor in identifying, removing and destroying wastewater contaminants is discussed. Nanosensors based on nanomaterials are used to identify contaminants and nanomaterials that are used as nanophotocatalysts and suspensions to remove and destroy these contaminants.

کلمات کلیدی:

Nanotechnology, Antibiotic Resistance, Nanomaterials, Nanoparticles, Antibiotics, Antibiotic-resistant bacteria, Antibiotic-resistant genes, Municipal Wastewater