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CSE - B

Sitams

Application of nanotechnology in waste water treatment

Abstract:

Water on earth is a precious and finite resource, which is endlessly recycled in the water cycle. As we know the challenges faced by global water developments, we require novel innovate water technologies in order to ensure a supply of drinking water and reduce water pollution.

Wastewater is any water that has been adversely contaminated by organic pollutants, bacteria and microorganisms, industrial effluent or any compound that deteriorated its initial quality. It can be sub-divided into:

- i) Municipal wastewater (liquid waste discharged by domestic residences and commercial properties)
- ii) Industrial wastewater (liquid waste discharged by industrial and agricultural activities). Some of the factors that might affect the composition of wastewater are: land uses, groundwater levels, and the degree of separation between storm water and sanitary wastes. The composition of municipal wastewater is usually less variable than industrial wastewater.

Against this background, the adaption of highly advanced nano technology to traditional process engineering offers new opportunities in technological developments for waste water treatment. Thus in this paper, the application of nanotechnology by using nano materials such as metal nano particles, metal oxides, carbon compounds, zeolite, filtration membranes etc... in the field of waste water treatment.

Potential Issues

Risks to Human Health

Although the benefits of using nanotechnology for removing contaminants from water have been widely discussed, more research needs to be conducted in order to assess its potential negative impact on the environment and on human health, a few of the studies conducted on this issue

indicate that certain unique properties of nano materials such as their shape and size may cause them to be toxic. They may also be responsible for the interaction with biological macromolecules within the human body, leading to the development of diseases and clinical disorders. However till date, water purification from nanotechnology has not led to any ascertained health or environmental problems.

Availability

Another major challenge is the availability of suppliers of nano materials. As mentioned earlier nanomaterials are known for their high surface area to mass ratio and can therefore perform their function at a more affordable price. However, if suppliers of these materials are not readily available, it could seriously undermine the potential advantages of using this technology

Key words: Precious, Metal Oxides, Carbon Compounds, Zeolite, Filtration membranes, Nano Materials etc..