Municipal wastewater reclamation and reuse using membrane-based technologies: a review

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ABSTRACT

Human well-being and socio-economic development of the society depend notably on two invaluable resources water and energy. Water scarcity and increasing water demand have made water supply a challenge to the world. Thus, further efforts should be made to develop and improve technologies for wastewater treatment and reuse which can provide an alternative water supply. Membrane technology is the most efficient technology in wastewater treatment, and thus this paper mainly reviews the recent advances of membrane-based technologies applied to wastewater treatment and reuse. Firstly, the potent pollutants in wastewater and the related traditional treatment methods were discussed. Then, the development, applications and challenges in membrane technology for wastewater treatment were reviewed. Furthermore, the membrane-based integrated technologies and the prospects of these technologies were discussed, including membrane filtration combining with pre-treatments, membrane filtration combining with activated sludge process and membrane filtration combining with the advanced oxidation process.

Keywords: Wastewater reuse; Potent pollutants; Membrane-based technology; Advanced oxidation processes; Integrated technology